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THE CENTRAL COUNCIL FOR HEALTH EDUCATION

THE CENTRAL COUNCIL FOR HEALTH EDUCATION

Tavistock House, Tavistock Square, London, W.C.1

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THE

Health Education Journal

A QUARTERLY FOR ALL WHO ARE INTERESTED IN HEALTH

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Dr. Robert Sutherland has given up the editorship of the HEALTH EDUCATION JOURNAL, *which he has held since* 1943. *He has also resigned from his position as Medical Adviser and Secretary of the Central Council for Health Education, to take up an appointment as Senior Lecturer in Preventive Medicine and Public Health at the University of Leeds. Dr. John Burton, formerly Deputy Medical Adviser to the Central Council, has been appointed Editor.*

WHAT MAN KNOWETH HIS OWN FATHER ?

It is rare that one can ascribe any movement to the genius of one man alone. All our social activities are dependent on the co-operation of many individuals, humble and famous, alive and dead. The best that anyone personally can hope to have said of him is that " he had a hand in the job." But movements do crystallise out around certain names, and this we can say of our late Editor, Dr. Robert Sutherland, who has now left the Central Council and taken up a senior lectureship in Leeds University.

Let us consider, then, in tribute to him, what happened during his period of editorship. The main theme, we feel, is that Health Education, which was always an energetic Atom, has become an established Element in the periodic tables of both Medicine and Education. This has happened as the result of patient work in lecturing, editing, pamphleteering, exhibition-making and answering accurately the innumerable enquiries of a growing circle of disciples.

The surest foundation for Health Education is enthusiastic and well-informed people. The main aim, therefore, of all this patient team-work has been to create a large number of people, both professional and lay, who have been given a solid grounding in the value, content and method of educating their fellow men in matters of physical and emotional health.

Let us consider, as well, some of the major events of the last decade, and what changes have taken place in the outside world for which the Health Education movement can take at least part of the credit. Maternal and infant mortality has dropped beyond all expectation. Diphtheria has become a disease of minor social importance, with a saving of thousands of child lives and millions of pounds. The nutritional state of the nation has improved dramatically. The public has become alert and active in campaigning for cleaner food. Venereal diseases and tuberculosis have had the veils of secrecy removed and are now subjects over which laymen can think and talk more rationally. The systematic study of human biology and health has begun to appear in the curriculum of schools. Finally, the attitude of the people over many health matters has taken a great stride forward, particularly in matters concerning children.

Impressive as these changes appear, they are only some events associated with the infant development of Health Education in this country. The process of growing up has presented new and exciting problems. We hope that the early adult life of the Central Council for Health Education will provide the experience and wisdom which enable us to tackle these problems effectively. It will remain the policy of this Journal to collect experience from all relevant fields at home and abroad and present it concisely for the benefit of its readers.

LEARNING THROUGH THE EYE

By J. E. STUART, B.Sc., *Research Officer in Visual Aids, National Foundation for Educational Research.*

MOST of us spend at least twelve hours of every day with our eyes open, and therefore with our retinas receiving impressions which they transmit to our brains. What we do about these impressions depends entirely on our brains and on the training which they have had in interpreting the messages sent to them by the eyes. In general we ignore most of what we see. This is either because we are not interested in it, or because we do not understand it, which is almost the same thing, for if we are interested in something we usually take steps to see that we do understand it.

When we see something, are interested in it, and so consider the problem of learning about it, we immediately find that our eyes are not the only instruments of learning involved. A small baby who is presented with a rattle does not lie and gaze at it. He stretches out his hands to feel it, and explores its shape with them. He finds that it makes a noise, and takes pleasure in making it do so. He puts it in his mouth in an attempt to taste it. This example is perhaps an unfair one, as a small baby, according to Mann and Pirie, has not yet learnt to accommodate his eyes to gazing at any particular object.

However, it must be agreed that at most levels of learning several of the senses are involved and, therefore, that learning through the eye can only be considered in relation to learning through the other senses, especially the ear.

It has been claimed that the great majority of our learning is through the eye. Perhaps if we regard printed and written matter as entirely visual material, this claim might be considered as having some foundation. But our comprehension of written matter surely presupposes a good deal of aural learning, so that it is unfair to classify learning from books as entirely through the eye.

If we show a child a series of pictures and do not tell him what they are about he will not learn anything from them. A museum where the exhibits are numbered, so that reference has to be made to a catalogue, arouses little interest in the ordinary visitor. A museum where the exhibits are

labelled and, even better, can be handled or moved in some way, has much more appeal to children, and indeed to most adults. The success of the Geffrye Museum and of the Science Museum, especially the Children's Corner, is a proof of this statement. In fairly frequent visits to the Science Museum, I have observed that the average age of the people solemnly turning handles or pulling ropes, or dodging photo-electric cells, is not as low as might be expected.

The Light of Experience

Often we misunderstand the things which we observe with our senses because our brains interpret wrongly the messages sent by eye and ear and touch. Cases in which incomplete and erroneous accounts of events seen in reality or on films were given by varying groups of people are detailed by Wittich and Fowlkes. In recent experiments I have found that children asked to write recapitulations of the facts given in a film do omit a great deal, but on the whole do not record erroneous notions if the facts are presented clearly. However, several cases of mistakes about features or events of a film can be quoted. For instance, some children were so sure that all castles have drawbridges that they mentioned them, both in work on the G.B.I. film *Medieval Castle*, where they are not specifically mentioned or shown, and in their accounts of the Unicorn Head filmstrip *Piers the Villein*, where the entrance to the castle is shown as being over a bridge of very solid masonry. In work on the B.I.F. film *Jordan Valley*, in which Jerusalem is mentioned but not shown, several children stated definitely that they had seen pictures of Jerusalem.

Adults have a good deal of experience and knowledge in the light of which they can select or reject features of events and objects which they see in reality or in pictures. Even then they tend to made mistakes. Children have not had this experience, and so have no criterion by which they can judge what to accept and what to reject. For instance, an infant class was shown a film about wild rabbits, in which there is at one point a striking contrast of light and shade on a rabbit sitting up and eating a leaf. An adult seeing the film immediately rejects the idea that it might be a black and white rabbit because he knows that most wild rabbits are greyish-brown. Some children who saw the film said they thought that it was black and white. It is possible that many others thought so too, but did not say so, being unlikely to remark on something which might not seem to be abnormal. It is only by accident that we find out about many misconceptions which people have, because of this tendency to refrain from remarking on what seem to be normal.

Adults can usually find the meaning of things which they see in the light of their experience. Children seeing something outside their experience do not easily grasp its meaning. A child has an astonishing eye for detail

and position, and can often describe a scene with great accuracy, but without any comprehension of its significance. Here is a quotation from an essay written by a boy who had seen a captioned filmstrip on the explorers who found the way to India, without being given any teacher's explanation. The frames being described are intended to exemplify the purpose of Henry the Navigator in fostering exploration, and the personal interest which he took in his men's work. " . . . .a picture of Henry the Navigator standing on a balcony with other men watching his ship being built. Next was another picture of him standing beside a man sawing a plank."

Children can very often draw extremely accurate representations of scenes which they have seen on films or filmstrips, which shows that they have observed them well; but it is obvious that their acute powers of observation must be directed towards the objects in their field of vision which can contribute in a meaningful way to their experience.

Learning from our Environment

There are many ways in which we can be assisted in learning through our eyes, and each way has its advantages and disadvantages, which must be exploited or countered in its presentation. The most important visual aid for all of us, children or adults, is our real environment. From it we can learn facts which will help us in our daily life, and also see things which will give us pleasure and a greater knowledge of the world around us. Expeditions to places of historical interest, to factories and farms, or to the local pond, are a most valuable part of education, and they are becoming more and more possible as transport difficulties are solved. The smell of a gasworks, the incredible deftness of factory workers doing an intricate job, the sense of the past in an ancient building, or the fascination of the diversity of life in a pond have to be perceived in actuality to become a real part of experience. We are fortunate that we are able to learn so much in this way. However, there are places which we are unlikely to see ourselves, and in these days of improving communications it is essential that we should know something of them. International understanding cannot easily be fostered in people who know nothing about those whom they are endeavouring to understand, and even less easily in those whose knowledge is based on erroneous suppositions. We shall never understand the Russians if we think they wear heavy beards, Astrakan caps and jackboots, and that they rush about waving sabres and singing the Volga Boat Song; or the Chinese if we think they are a race of cunning and inscrutable opium smokers, or the Americans if we think they are ruthless gangsters or singing cowboys. Whether we like it or not, we must face the fact that these misapprehensions and others, some of them much more credible and therefore more dangerous, do exist in the minds of many people.

The Influence of Films

It is claimed that many of these erroneous ideas of the character and lives of others are propagated by the cinema, and this may well be so in a great many cases. Whether or not people believe that what they see in the cinema is true depends very much on the attitude which is inculcated in childhood towards pictorial representations. Many children seeing films imagine that they are seeing something really happening. For instance, in a class of infants shown a film on giraffes the number of children who mentioned the film in subsequent written work was equalled by the number who said " I saw a giraffe." If this impression of reality remains, and we have no evidence that it does not do so in some cases, then it is possible that many films shown today are a great danger to international relationships and to social relationships also. On the other hand it must be admitted that there are some films, only too few, which do give a true impression of other lands and other people.

A great deal of research is necessary before anyone can say with any certainty how much of the content and atmosphere of a film is retained by children seeing it. The report of the Departmental Committee on Children in the Cinema gives a list of searching questions which must be answered before we can find out much about the social effect of films. These questions apply as much to educational films as to entertainment films, but on the whole the makers of educational films strive to present the truth as little embroidered as possible.

One way in which the danger of children misunderstanding things seen in films, or of accepting them uncritically, can be averted is by the wise use of films as visual aids in schools. The objective consideration of truth as presented in a good educational film should do a great deal towards fostering a critical attitude to the film seen as entertainment, and the knowledge of the mechanics of projecting the film, which must be acquired in the course of presentation in the classroom, might do a great deal towards dispelling the impression that the events shown on the screen are really happening. Also the discussions with which good teachers follow the use of films, help the children to think about what they have seen.

The great advantage of the film for use in teaching is that it can depict things in motion, and that it can, by careful photography, analyse that motion. We can see close views of the parts in which we are particularly interested. We can see the movement we want to analyse slowed down, or speeded up, so that we can understand the movements of the sprinter as he flashes over the course, or the nasturtium as it grows.

When the film is projected in darkness the audience is particularly open to its influence. This can be both an advantage and a disadvantage. It is an advantage in that the visual attention of the audience must be concentrated on the oblong of brightly lit screen. However, that very con-

centration of attention may be a pitfall, since it is only possible to keep attention on one object for a limited period of time. Unless the film is very carefully constructed, therefore, it is possible that some small irrelevance may distract attention from the main theme, especially if the irrelevance is of interest to the observer. For instance, a child, admittedly from an urban district, after seeing a film about a mare and foal trotting round a field, remarked, " Wasn't it a lovely bus ? " A re-examination of the film revealed that at one point a bus did go along right in the background.

It is both an advantage and a disadvantage that the brightly lit oblong can exert an almost hypnotic effect on the beholder, so that he tends to associate himself with one or other of the personalities on the screen. It is an advantage when the film is designed to inculcate some desirable attitude, but it is a grave danger when there are evil personalities depicted.

Still Pictures

When movement is not essential to the understanding of the facts to be learnt, still pictures of various kinds are very useful. The filmstrip is an educational tool which is fast gaining popularity, and which, in the hands of a good teacher, can be used in many ways. It has the advantage over films that the projection apparatus is easier to handle, and that any picture can be held on the screen as long as is necessary.

A great deal can be done with still pictures of various kinds. The prevalence of pictorial advertisements is a proof that the use of pictures can produce results in the minds of people seeing them, even casually. When they are used by a teacher who points out the relevant details, and then leaves them on the classroom wall to be studied, and to become part of the pupil's visual surroundings, they can be very effective.

Critical Observation

In this article I have not confined my remarks to the ways in which children learn through the eye in school, but have tried to consider how we all learn through the eyes all the time. Both children and adults are observing and learning from whatever they are seeing in all their waking moments. We can only learn effectively if we have right habits of critical observation. These habits can be instilled by good teachers who use the whole of the children's environment as teaching material, and who also introduce into that environment other material which will help their pupils to understand the complexities of the world we live in.

References

Mann, Ida, and Pirie, Antoinette (1946) *The Science of Seeing.* Penguin Books, p. 18.
Wittich and Fowlkes (1946) *Andio-Visual Paths Learning to* pp. 21—27.
H.M.S.O. (1950) *Report of the Departmental Committee on Children and the Cinema* pp. 88—91.

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THE DOCTOR AS TEACHER ?

By J. A. L. VAUGHAN JONES, M.B., Ch.B., J.P.

YOU may doubt the need for the question mark in the title of this contribution, but it is essential in these days to put our problems clearly and admit our errors or omissions. We must try to see things as they are, and not as we should like them to be.

Analysing the various functions and responsibilities undertaken by the General Practitioner in modern general practice, the B.M.A. Report *General Practice and the Training of the General Practitioner* puts " Health Education and Preventive Medicine " as the *second* item in the responsibilities of the General Practitioner. Paragraph 24 of this same Report, headed " Health Education and Preventive Medicine " states: " The responsibility for prevention of disease and health education forms an increasingly important aspect of the General Practitioner's functions and emphasises his obligations to patients who are well in addition to those who are ill. *No-one else is in so advantageous a position to give advice on the maintenance of health, the principles of healthy living and the prevention of disease*. The family doctor is welcomed into the homes of his patients, he knows their circumstances and their jobs, the family problems and responsibilities; thus many opportunities for health education will occur in the home, in the surgery and at the special sessions which many practitioners hold for ante-natal examination, nursing mothers and infant welfare. Another aspect of preventive medicine consists of active measures, such as vaccination and immunisation, and general preventive medical examination especially of children." (The italics do not appear in the original text). This is a policy of perfection to which we must all aspire. For the moment let us put it no higher than that and not in the past tense.

We are told the opportunities are there; do we see them ? and if we see them, do we grasp them as we should ? if we don't, why not ?

The Opportunities

Are they present ? Theoretically, yes—presented to us every hour of every day; problems for resolution, each problem an opening gambit for some education in health and the way to maintain as well as attain the "positive health" for which we look nowadays.

It can be said that under the conditions of practice imposed since the introduction of the National Health Service Act in July, 1948, the opportunities which should have multiplied exceedingly have actually lessened. They have lessened because the emphasis of the Act has most assuredly been placed on a "treatment service," rather than on the preventive service which is so generally recognised as being the outstanding requirement of "positive health."

Much has been said and written about the role of the General Practitioner as the front line in the defence against disease, but the new Service (N.H.S. Act, 1948) relegates him to a relatively passive role as a purveyor of treatment for established disease. It is true that in this passive role he has been overwhelmed by the irrational demands of a public confused by a plethora of social legislation. Let us be quite blunt about this; the demands have been inordinate and no adequate reason has been forthcoming.

In the same manner, largely from the absence of a sense of community responsibility, the hospitals, with a further treatment service, have been submerged under a positive flood of requests for assistance both out-patient and in-patient. This may be partly the result of what might be termed "reactive depression" on the part of certain practitioners, and also in no small degree of the absurd demand for specialist intervention for the most trivial conditions—a demand which has been fostered by unfortunate propaganda in much of the national Press.

The workers of the Public Health Service, who are the specialists in the attack upon disease or ill health and all the concomitant contributory factors, have been given a relatively minor role, instead of a major one supporting the General Practitioner as the front line in the attack upon—as opposed to defence against—ill health. For this reason it can be postulated that the pre-N.H.S. Act days gave greater opportunities to the General Practitioner for health education than he has had since the Act. There was more time—which is one of the most important factors—to talk to the patient; a closer human relationship—the patient and his family were part of the doctor's family, the whole of the stresses of living were part of the sphere of general practice. The strength and weaknesses of individuals were recognised; individuality was not just a name, and patients "belonged."

It is reasonable to suggest that in these "bad old days" social medicine was not just a name but was actively practised without its fullest potentialities being realised. Perhaps we might better term it "environmental medicine"—man in his surroundings at work and at play, but all the time "total man in total environment". This is a picture that we must never forget and which makes it so essential that General Practitioners shall take full advantage of their privileged position to contribute in a considerable measure to the attainment of that proper physical and mental state which

makes man a useful member of a responsible community. This may seem far fetched, but unless we have ideals we get nowhere.

It has been said that the purpose of rehabilitation in the medical sphere is "to restore the worker to industry, to restore the citizen to society and the man to himself." Assuming that the opportunities for health education are not as frequent now as they have been—largely owing to the time factor—do we take our opportunities? We do, but not as much as we should, even with limited opportunities. The sphere has widened and social problems, as opposed to purely medical ones, are increasing. We must never forget the intimate relationships of these. The frustrations imposed on a nation by the post-war era, and the general uncertainty of the international position have much to do with ill health, in both social and medical aspects, if we choose to separate them. For instance, housing shortages, rationing restrictions, wars and fears of wars—all these are factors which have a real bearing upon the prevalence of ill health, and little can be done to prevent them. But a contribution can be made to try to offset these unfortunate effects of so-called modern civilisation. Treatment by suggestion is nothing new and is not the prerogative of psychiatrists alone. In times of emotional stress many patients are sustained by the comforting words or assurances of their family doctor, whose knowledge of all the little facets of the family relationships enables the advice to be of maximum value. Inevitably it must be conditioned by the social milieu, and the greatest emphasis must be laid on the patient-doctor relationship.

The Patient-Doctor Relationship

If this relationship can be maintained and improved under existing conditions of practice, that will be one of the greatest contributions to the achievement of positive health that could be made.

This, of course, is an indirect method of implementing ideas of health education, but it is none the less useful. The doctor-patient relationship is something which is not achieved instantly; it is built up over a period of time by mutual trust in extraordinary circumstances, and we must realise here and now that illness, mental or physical, should be regarded as an extraordinary circumstance or occurrence. This relationship cannot be built up on a one-minute demand for "a bottle of aspirins for a headache," or "a pound of cotton wool and a dozen bandages" for a tiny abrasion, or certificates by the thousand for corsets and a legion of the other commodities or privileges. First, are required time, atmosphere, the inclination—nay rather the keen desire—to know the patient rather than his ailment; to discuss and evaluate the whole being in his or her whole environment. On such a basis, mutual trust will evolve, and this is the soil on which sound principles of health will flourish. It demands the full

co-operation of the patient, and this co-operation *means that the doctor shall be recognised as an adviser on health matters and not merely a supplier of medicaments for physical or aesthetic needs, real or imagined.* There has been a considerable improvement in the community health in the last 10—15 years, and while it would be ridiculous to suggest that General Practitioners alone were responsible for the very considerable drop in maternal and infantile mortality and the increase of immunisation against infection,—to mention only some of the progress,—it is reasonable to suggest that the quiet, though not ready, acceptance and approval by the G.P. of these schemes played no small part in the public acceptance and approval of the new ideas. It was not always a ready acceptance by the public any more than by the doctor, and public approval was not achieved without a struggle. But there seemed time in those days to explain, to guide, indeed to cajole, in the interests of community health.

At the Annual Representative Meeting of the British Medical Association in 1947, I made the following remark in the course of a plea for the integration of the various sections of the profession: "A change of emphasis from curative to preventive medicine has been evident during the last few years, and the general practitioner is both willing and competent to undertake his full share in preventive work. It is essential for him to do so, to achieve the satisfaction of a job well done."

The acceptance of this responsibility sets squarely upon the General Practitioner the need to inculcate at all opportunities sound principles of health. The opportunities are there, even though conditions are difficult and the terrific strain of present-day general practice tends to make the human relationship of patient and doctor something unusual, rather than the fundamental basis of medical practice. There must be improvement—time for the G.P. to do his job properly; and the patient must co-operate to the full in making this possible.

Only this bilateral approach will produce the results which will give maximum emphasis on the achievement of health, as opposed to the treatment of disease. If our health education is effective, the treatment of disease will be relegated to its proper, minor role.

What of the approach ?—*Simple points put simply* are most likely to achieve success. Long-winded, erudite, and sometimes not quite so erudite, explanations only lead to confusion, and technical terms give rise only to fears. It is strange how difficult it is for some doctors to paraphrase technical points and issues, but it must be done in simple language which allows of no confusion. It is better to give no explanation if you can only alarm the patient by your attempt. The difficulties here are very real. Recently I tested out a simple medical thesis with a class of non-medical university students, and it was amazing to find the varying reactions which resulted and which clearly showed that even in the simplest

language, to an educated lay audience, it is possible to create entirely erroneous ideas. Of course this might have been the fault of the particular lecturer, but it clearly shows the necessity for care in the presentation of health principles and advice.

One word of warning—the aim is health consciousness, not disease consciousness, which is the result sometimes achieved by the popular Press and which must be avoided at all costs.

The value of ante-natal care, the benefits of immunisation, personal hygiene, the cleanliness of the house, clean food and the dire results of neglect in this sphere, simple principles of ordinary and invalid diet, proper cooking of food—all these points can be made quite simply and succinctly. Personal knowledge of cooking is very much better than the label on the packet or tin, and a simple cookery course in the medical curriculum would be much more useful than some of the intense cramming of quite unnecessary detail which is now required.

The medical profession's responsibility is no less on the cultural side. What of that most essential factor in the present-day needs of the community—the intelligent use of leisure ? So often we find films, films and still more films, with a occasional boxing or football match. It is right and proper that people should have opportunities for emotional outbursts, preferably outside the home, but far too many people nowadays are spectators, in spite of unrivalled opportunities for self-expression. The B.B.C. may be partly responsibile for this, but in thinking of our patients do we ever suggest that their activities might be directed to the Youth Clubs, Drama Societies, Music and Opera Circles and the thousand and one opportunities offered to people of all ages by the Continuation Classes? The extension of cultural interests is most important if we aim to rise above the cheap eroticism and sensationalism which seem to permeate our modern civilisation and for which the Press must take some responsibility.

It is impossible for the doctor in his role as teacher to shoulder the anomalies of overcrowding etc., which still obtain even in a Welfare State, but a challenge to dirt by a brusque and trenchant comment can achieve surprising results, although it really takes time to make people realise their social obligation. Methods must vary with individuals —we sometimes forget that people, whatever their stations, are individuals in the widest connotation, sometimes submerged in their milieu but still individuals, and it will be by individual approach that we can achieve results.

The General Practitioner must be given time to undertake his full role in preventive medicine, and when he gets the time we must hope that he will seize it to accept the responsibilities of his unrivalled position in the attack against ill-health—be it individual, familial or communal.

COMMENTS ON THE INVESTIGATION OF THE INFERTILE MARRIAGE

By R. Christie Brown, F.R.C.S., F.R.C.O.G.

Infertility is no longer considered to be solely a gynaecological problem, but it is not surprising that the subject has until now been dealt with chiefly by gynaecologists, because tradition has placed the responsibility of an infertile marriage upon the woman. Our modern methods of investigation and treatment, however, can no longer be covered by the gynaecologist alone, and a fully equipped Infertility Clinic should be staffed with seminologist or andrologist, genito-urinary surgeon, endocrinologist, radiologist and psychologist, in addition to the gynaecologist. Before referring childless couples to such clinics, many successful results can, nevertheless, be obtained by education and the application of simple tests.

Investigation into the causes of infertility began in a surgically conscious era, and for many years the mechanical dilatation of the woman's cervix and curettage of the uterus was the only test and treatment. Later came the tubal patency tests, which are highly efficient as methods of diagnosis and also appear to have some curative value. That many marriages remained infertile despite the fact that the woman was found to be mechanically normal led to the tardy recognition of the role of the male, and as soon as it was appreciated that we were dealing with an infertile marriage and not with an infertile woman, we began to pay as much attention to the question of breeding amongst ourselves as we had, in the past, paid to the breeding of our animals.

The first consideration must be the general health of both partners. Meaker has stressed the importance of the conglomeration of subfertility factors in an infertile marriage. He states that there are many factors which combine to produce sterility, analysis of which shows numerous conditions pertaining to general health. In the majority of marriages there are at least four such factors, but the important point is that they are distributed between the two partners. The fertility of one partner can outweigh the subfertility of the other; that is, a subfertile woman can be fertilised by a highly fertile man and vice versa. But when both together contribute to the union sufficient subfertile factors to lower the level of fertility to below par, it will remain sterile whilst,

at the same time, the woman may be ovulating, her tubes patent and her husband passing a reasonable number of sperms.

It would appear logical, therefore, to attempt first to assess the relative responsibilities of the husband and wife. For this purpose, the post-coital test is of the greatest help. This test, which should be made at the time of ovulation and about seven hours after intercourse has taken place, overcomes the practical difficulties involved in the obtaining of a specimen of semen for testing which are often associated with the patients' religion or with aesthetic considerations. The interpretation of the post-coital findings depends upon a knowledge of the appearance of the cervical mucus plug in the normally healthy ovulating woman.

The Cervical Secretion

In health there is a cyclical change in the character of the cervical secretion throughout the menstrual cycle. At the time of ovulation, the mucus can be seen, per speculum, to be streaming out from the cervical canal and clinging to the posterior lip of the cervix. It is clear and glycerine-like and can easily be lifted out with a pair of artery forceps. Certain physical characteristics can then be assessed, the chief of which is the fibrosity of the mucus, that is, the capacity of this liquid to be drawn into threads. This can be done by separating the blades of the forceps holding the mucus. If fibrosity is satisfactory, the mucus will stretch between the two open blades like a thin elastic thread. In the post-ovulatory, (*i.e.*, pre-menstrual) phase, the mucus becomes thick, opaque and without fibrosity. It becomes "tacky" —if a blob is placed upon a microscope slide, compressed with another slide and the slides are then separated, the mucus, unlike the clear ovulatory mucus, adheres to the one and breaks away from the other.

The clear mucus of ovulation appears to be due to the action of oestrogen, and it would be more accurate to call this an oestrogenic plug than an ovulatory plug. The tacky opaque mucus, found pre-menstrually, is presumably due to the presence of progesterone. A clear "oestrogenic" mucus found immediately prior to menstruation could, therefore, be taken as an indication of absence of ovulation and the presence of unruptured Graafian follicles.

Pathological conditions of the cervix may be found:

(1) The cervix may be dry and devoid of mucus during the presumed ovulatory phase. This is seen in anovular women, who may not even produce Graafian follicles and often exhibit android characteristics or the pituitary type of obesity. Sperms appear to be unable to invade this type of cervix.

(2) There may be a thick, opaque, gelatinous, non-fibrotic mucus containing, microscopically, large numbers of leucocytes. It is

associated with chronic cervicitis. Sperms appear to become enmeshed in such a mucus, showing oscillatory movements but no progress through it.

(3) There may be frank purulent discharge from acute inflammation.

Fertilisation and Nidation

The importance of the clear fibrotic mucus is that it is easily penetrated by healthy sperms. This fluid medium, found at the time of ovulation, is the type through which sperms can most easily migrate. The premenstrual opaque and tacky cervical mucus is hostile to the passage of sperms. Barton and Wiesner have shown that the ovulatory mucus appears to have some selective capacity in that only morphologically normal sperms are generally seen within it.

Thus the quality of the male strives in the cervix with the quality of the female and this may account for the fact that a woman may be sterile with one man and fertile with another, and vice versa. She may elaborate a cervical secretion which destroys all but the most potent of sperms. The cervical mucus might be regarded as the mirror of a woman's endocrine potentiality for reproduction, and the post-coital test allows observation to be made of the interplay between the quality of the male semen and that of the female receptive mucus.

Fertility implies not only the ability to conceive but the ability of a mating pair to achieve the development of a healthy embryo and its safe delivery. Just as quality vies with quality in the struggle of the migratory sperm to overcome the hazards of the journey through the cervix, a similar contest takes place at the time of nidation when the fertilised ovum lying in the uterine cavity seeks a point at which to embed itself. That there are faults in nidation is undoubted, and many believe that a sterile union [1 & 3] occasionally results from such a fault. Imperfect nidation may account for abnormalities like placenta praevia. Up to the point of nidation, the endometrium is prepared for the reception of the fertilised embryo by hormones elaborated by the ovaries, but this preparation is maintained for only about a fortnight from the date of ovulation unless the ovaries are stimulated by the fertilised ovum to continue elaborating the hormones.

Stimulus from the Embryo

The problem of whether or not the embryo will continue to survive is complicated by the fact that, although the suitability or otherwise of the endometrium for nidation in the first instance is conditioned by the action of the corpus luteum alone, this is true only up to the point of nidation; from then onwards, the activity of the corpus luteum, and consequently the character of the endometrium, depends upon the

stimulus (foetal prolan) from the embryo. A good stimulus means a good endometrium; a weak stimulus, a poor endometrium (maternal incubator). There is thus a direct link between the genetic composition of the embryo and the continuance of the life of the corpus luteum. Nature in this way cunningly contrives that the intra-uterine environment shall be genetically determined, and has imposed upon the embryo the necessity to maintain the elaboration of the hormones of its own mother's pregnancy. From this linkage between genetics and intra-uterine environment we can appreciate that a certain percentage of miscarriages are the responsibility of the male, and that it is not sufficient for him merely to produce sperms which will be capable of fertilising his partner; they must also be sufficiently virile to contribute, through his embryo, towards the maintenance of her pregnancy, otherwise he will father only miscarriages.

Subfertility on the part of the male can be compensated for artificially by the administration to the woman of synthetic pregnancy hormones from the date of ovulation. In this way, the endometrial soil is richly prepared for the reception of the delicate seed. Artificial boosting of the pregnancy should not be kept up longer than the 18th week of pregnancy. To do so would appear to be genetically unsound, because by this time the chorion, that is the embryo, elaborates the hormones alone and no longer merely stimulates the corpus luteum. If it fails, therefore, to supply its own hormones, it is of poor genetic quality and Nature should be allowed to discard it. Malpas and others have shown that the incidence of foetal malformations is related to the problem of miscarriage, and if a threatened miscarriage is arrested and ultimately continues to term, there is a greater than average chance of a deformed baby resulting. I have recorded[2] elsewhere three cases of threatened miscarriage in which pregnancy was prolonged artificially and in all of which an abnormal foetus developed.

The Infertility Clinic

It is still usually the woman who presents herself in the first instance to the Infertility Clinic and it is right, at this first interview, to examine her. If she appears to be in normal general and gynaecological health, an inspection of the cervix should be made and the character of the cervical mucus should be considered in relation to the time in her menstrual cycle at which the examination is made. If any pathological condition of the cervix be found, she should be referred for treatment to the gynaecologist; but if not, arrangements should be made for the performance of a post-coital test at the appropriate time in the following cycle. Instruction should also be given to her regarding her fertile dates, and the importance of concentrating intercourse at that time should be stressed.

She can be given simple instructions as to how to calculate these. It is believed that ovulation takes place fifteen days prior to the onset of a period. Therefore in a 28-day cycle, the fertile day would be the 13th day from the onset of a period. Since the average woman varies by a day or so, she has got to allow for this by adding a couple of days before and after the fertile day; so that a woman with a 28-day cycle should be given the 11th to the 15th days, and with a 26-day cycle, the 9th to the 13th days, etc.

Further investigation should depend upon the result of the post-coital test. If no sperms are found to be present in a normal ovulatory mucus, the man is either not achieving adequate penetration, or his sperms are unsatisfactory, in which case he should be referred to a seminologist. If, on the other hand, a good mucus is found to be teeming with actively motile sperms and she fails to conceive, it is assumed that there must be some obstruction operating in the woman or that her Graafian follicles are failing to rupture and she is therefore not ovulating. She should then be referred to the gynaecologist for tubal patency and ovulation tests.

The percentage of pregnancies resulting from such simple measures as the giving of advice regarding fertile days and the cauterisation of mildly infected cervices, etc., is sufficiently encouraging to justify the running of small subsidiary clinics to act as "sorting houses" from which the patients could be referred to fully equipped infertility centres. The equipment required would not amount to much more than that which is required in the normal post-natal clinic. The discouraging figures following the treatment of infertility are found in those marriages which remain sterile after full investigation and treatment of both partners, and it is such marriages which require the service of a panel of specialists. A great deal can be achieved even by the provision of instruction and guidance alone to infertile couples.

References

Barton M. and Wiesner, B.P. (1945) *Irish J. Med. Science*, **6**, 567.
[1]Brown, R. C. (1948) *Brit. Med. J.*, **2**, 851.
[2]Brown, R. C. (1948) *Reproduction and Survival.* Edward Arnold & Co.
Malpas, P. (1942) *J. Obstet Gynæc*, **49**, 65.
Meaker, S. R. (1930) *J. Med. Cincinn.*, **11**, 354.
[3]Sachs, E. (1947) *Therapeutic Problems*, **4**, 104.

MILESTONES IN MEDICINE

15. AMBROISE PARÉ,

greatest of Renaissance Surgeons.

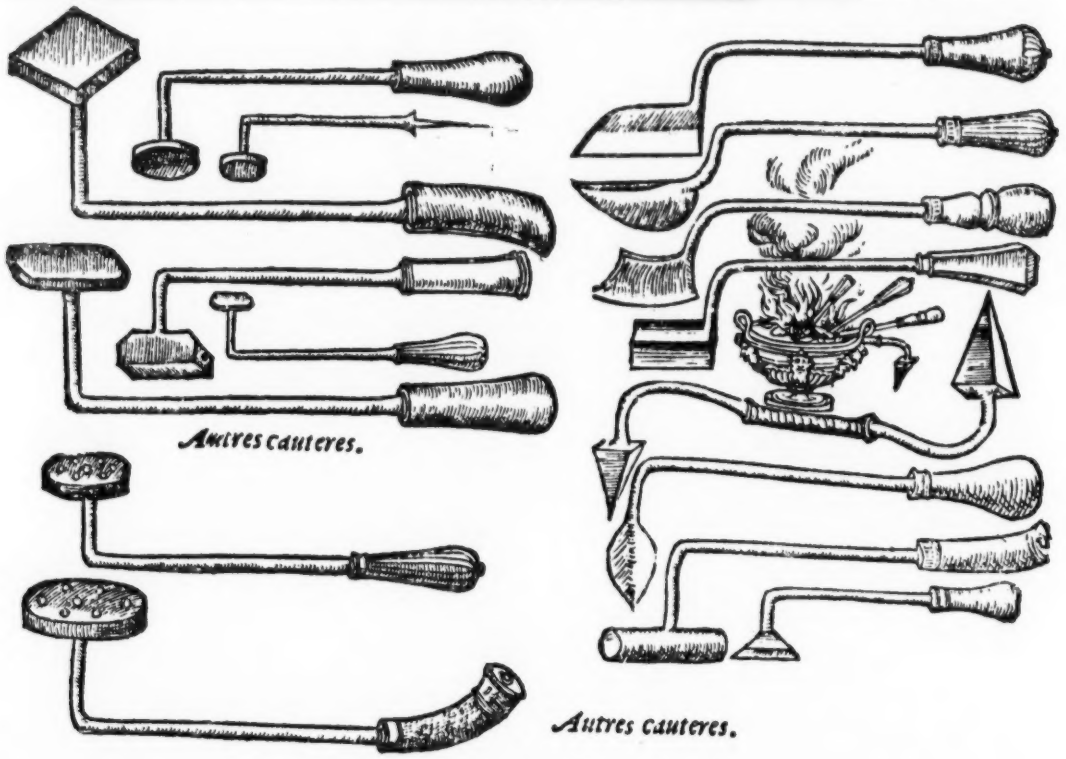
By E. ASHWORTH UNDERWOOD, M.A., B.Sc., M.D., D.P.H., F.L.S., *Director The Wellcome Historical Medical Museum; Hon. Lecturer, University of London.*

IN the preceding two articles we have been dealing with great anatomists of the Renaissance. These men were all trained in the universities, and, apart from their outstanding scientific work, all of them had some pretensions to be regarded as scholars. In the realm of surgery, also, great advances were made, and the chief author of these innovations was not a scholar but a man who had risen by reason of his inherent talent and sheer force of character.

This was Ambroise Paré, who was born—probably in 1510—in the village of Bourg-Hersent near Laval, in the province of Mayenne in France. Paré began his studies in a barber's shop as a youth and by 1533, when he was about twenty-three years old, he appeared at Paris. He soon became a house-surgeon (' compagnon chirurgien') at the Hôtel Dieu, the greatest of the Paris hospitals, and for three years he remained a resident in the hospital. While he was there he performed operations, carried out post-mortem examinations, and taught the students.

When Paré left the Hôtel Dieu he had to make up his mind about his future. France was at that time engaged in a series of wars and expeditions, and on the field of battle were golden opportunities for the practice of surgery—though the practice was of a rough kind. Paré decided to become what we should now term an army surgeon, and in between his campaigns he intended to practise civil surgery in Paris. At that time there were no official medical officers or surgeons in the army. The King took with him his own physicians, surgeons and apothecaries, and each nobleman who supported the King with his forces likewise had his own medical and surgical staff. When Paré left the Hôtel Dieu in 1536 he took service with Marshal Montejean and went off to the campaign for Turin. Until 1545 Paré was almost continuously in the field, and in all his military service lasted at least thirty years. He rose to be surgeon successively to Francis I, Henry II, Francis II and Charles IX. In 1541 he became a

Ambroise Paré 1510-1590.



Cauterising Irons in use during Paré's lifetime.
From his *Oeuvres*.

Master Barber-Surgeon, and thirteen years later he became a member of the Surgical College of St. Côme. In this he triumphed over much opposition, since it was always held that surgeons must write in Latin, and Paré spoke and wrote only French.

In the year 1559 Paré was indirectly concerned in a tragic accident which grievously affected France. On 29 June, Henry II was present at a tournament in Paris. On this, the last day of the tournament, he insisted on breaking a lance with the Comte de Montgomery, captain of the Scottish Guard. In the clash the King was mortally wounded above the right eye. For eleven days he lingered, while Paré and the other surgeons tried to remove broken splinters from the wound. Vesalius had been ordered to come from Brussels, but all these measures were in vain. On 24 August 1572 the notorious Massacre of St. Bartholomew took place. Paré, as a Hugenot, was in great danger, and it is said that Charles IX saved his life by hiding him in his bedchamber. Paré lived on till the year 1590.

Paré's great importance in surgery was due to the fact that very early in life he abandoned the practice of cauterising gun-shot wounds with boiling oil. When he was an old man he wrote a series of autobiographical sketches called *Journeys in Diverse Places*, and here he tells of his remarkable adventures and experiences on the field of battle. During the campaign for Turin in 1537 he went into a stable and saw three wounded men propped against the wall; they were far gone and

> " their clothes were still smouldering where the gunpowder had burned them. As I was looking at them with pity, there came an old soldier who asked me if there were any way to cure them. I said no. And then he went up to them and cut their throats, gently, and without ill will toward them. Seeing this great cruelty, I told him he was a villain: he answered he prayed God, when he should be in such a plight, he might find someone to do the same for him, that he should not linger in misery."

During this campaign Paré had his first experience of treating gun-shot wounds. He made quite sure before he started that the other surgeons were using the method of John of Vigo, by cauterisation with boiling oil of elders mixed with treacle, and he then took courage to do as they did.

> "At last", he says, "my oil ran short, and I was forced instead thereof to apply a digestive made of the yolks of eggs, oil of roses, and turpentine. In the night I could not sleep in quiet, fearing some default in not cauterising, that I should find the wounded to whom I had not used the said oil dead from the poison of their wounds; which made me rise very early to visit them, where beyond my expectation I found that those to whom I had applied my digestive medicament had but little pain, and their wounds without inflammation or

swelling, having rested fairly well that night; the others, to whom the boiling oil was used, I found feverish, with great pain and swelling about the edges of their wounds. Then I resolved never more to burn thus cruelly poor men with gun-shot wounds."

These essays were written as a counterblast to the surgeon Gourmelen who was still defending the practice of cauterisation. In another passage Paré tells how in 1553 during skirmishes the French wounded said that they felt pain in their wounds whenever the enemy's cannon fired, and some wounds bled afresh. Paré says to Gourmelen:

"*Mon petit maistre*, if you had been there, you would have been much hindered with your hot irons; you would have wanted a lot of charcoal to heat them red, and sure you would have been killed like a calf for your cruelty."

Paré wrote several famous books, and his *Complete Works* is one of the great books of surgery. In it he describes and illustrates in detail not only the numerous instruments which he used, but also the various weapons which caused the wounds. Paré had great experience of pestilence, and in 1568 he published his *Book of the Plague*. In surgery he is the natural complement to Vesalius in anatomy, and in addition he was one of the greatest and most independent spirits of the French Renaissance.

BIOGRAPHICAL NOTES

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LEFT-HANDED PROBLEMS

By MARGARET M. CLARK, M.A., Ed.B.,
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ATTENTION was directed towards left-handedness or "Sinistrality" as far back as 1100 B.C. and references to it are actually to be found in the Old Testament, which shows that it is no new phenomenon. In Judges 20, 15-16 there is mentioned a tribe which possessed 700 left-handed warriors, who could sling stones with unusual accuracy.

Studies have been made of the probable handedness of pre-historic man, by investigating the various relics of his tools and weapons. It appears from the way they are carved that pre-historic man was preponderantly right-handed. The choice of one hand, usually the right, but occasionally the left, and not either hand indiscriminately, is characteristic of man. It would seem that ambidexterity is an animal rather a human chacteristic.

Theories of Handedness

Numerous explanations have been put forward showing why man should choose one hand and become proficient with it, while his animal ancestors usually used both. Man, when he adopted an upright position, and began hunting for his food and catching it with weapons made by hand, concentrated his attention on becoming skilful with one hand. His paintings on the walls of caves, and later his writing, could be greatly improved by being consistently performed by the same hand. This much has been agreed by most people, but why he should choose his right hand for these operations, no-one seems very clear. Many suggestions have of course been made to explain, in the first place, why one hand should always be preferred, and in the second, why the hand most people prefer is the right.

It will perhaps be of interest to mention at least a few of the theories put forward to explain preference for the right hand. The difficulty is that, though many of them would account for right-handedness, they fall down when applied also to left-handedness. An example will make that clear. One theory asserts that people are right-handed because there is a greater blood supply to the right side—from that it would logically follow that left-handed people should have a greater blood supply to the left side, which is not the case. A similar objection condemns the explanation of the Gravity Theory, which states that anatomically the

centre of gravity is on the right side, and the Mechanical Theory, which states that with the chest expanded, the muscles on the right side work more efficiently. All these statements may be true, but before they were taken as a sufficient explanation, the reverse would have to be true in left-handed people.

An intriguing explanation is the Primitive Warfare Theory. Its upholders suggested that in primitive warfare man held his stick or sword in his right hand, leaving his left one free to protect his heart—this does not, however, explain the sinister minority of left-handers who, so far as we know, still have their hearts in the right place.

If everyone were right-handed, or half were right-handed and half left-handed, there would be no great puzzle. Left-handedness becomes an intriguing mystery when we consider that through the ages, in all races, and in spite of contrary training in many cases, there still remains a minority of left-handers. To be left-handed in a right-handed society has numerous disadvantages, yet in spite of attempts to stamp it out, whether we consider Britain, Greece, America or France, we still find approximately 4-6 per cent. of the population left-handed. Why should this be ?

Inheritance of Handedness

It appears from the evidence so far that left-handedness is inherited, although we do not yet know exactly in what manner. In certain families there seems to be a high incidence of left-handedness. Some investigators have found that such families also have more than the usual number of twins, so that there might be some connection between twinning and left-handedness. But this is not yet certain.

That more males than females are left-handed seems to be agreed by investigators. It raises the interesting question of whether this is the original distribution, or whether it is a result of the pressure of society. Briefly—are more boys than girls born with a tendency to left-handedness, or is it just that, while girls are more willing to bow to convention, boys are more inclined to be independent, or stubborn ? It would be most revealing to carry out a detailed study on the personality traits of left-handed writers, and compare the results with the personality traits of those who were naturally left-handed, or had a tendency to left-handedness, but did not hold out against the pressure of society. I do not know of any study which has been undertaken along these lines. Many difficulties lie in the path of such an investigation, most important of all being the difficulty of finding a reliable test, which will, with any certainty, measure native handedness. Most tests of handedness in the past have been based on strength, speed or accuracy, which are, after all, the factors most susceptible to environmental influences. This means

that such tests do not enable us to distinguish truly right-handed people from those who are naturally left, but for some reason use their right. There must be a considerable number of such cases.

Degrees of Handedness

In order to understand all the various types of handedness which are to be found among those who appear to use their right hand, it is necessary to consider the distribution of handedness.

If we assume the population to be divided naturally into right- and left-handed in the following proportions

| R | r | a | l | L |

R=extreme right. r=slightly right. a=ambidexterous.
l=slightly left. L=extreme left.

then the right-handed nature of society will result in this becoming

| R^1 | L^1 |

R^1=righthand writers. L^1=lefthand writers.

It is accepted that the majority of infants prefer one hand to the other, if not at once, then within a few months after birth, and it is clear that in a right-handed society, the right will be preferred rather than the left. Thus if a child is born slightly left-handed, the chances are that he will become right-handed. Imitation, training, and the right-handed nature of everyday objects are all inducements to his adoption of the right hand.

An ambidexterous child, or rather one who has no preference for either hand, will quickly appear to be right-handed for similar reasons. These are children who could have been good with either hand. If everyone else had used the left, they too would probably have done so, and been equally successful.

There is another group which has been given little consideration until recently. Rather than ambidexterous, they would be, to coin a word, ' ambisinistrous '—they would be as poor with either hand. They too will veer over to the side of right-handedness.

The left-handed writer will therefore be only the extreme case of left-handedness, even if no actual punishment is inflicted for using the left hand. Since all but these extreme cases are to be found among right-hand writers, it may be seen that it is worth while to carry out a detailed investigation of the handedness of a normal right-handed group. Pro-

vided that sensitive enough tests are used, there may be interesting results.

Eyedness

The study of eyedness has really developed as an outgrowth of the study of handedness. Preference for one eye is not so evident to the casual observer, nor does it, on the surface, present such difficulties. There are few actions in which we actually use only one eye. As regards the other aspect, involving unilateral sighting, with which Parson deals very fully, it is not clear to a casual observer that when we are apparently using both eyes for sighting, *one* is in fact sighting. We find a similar trend here, the majority being right-eyed, and the minority left-eyed, though there are far more people left-eyed than are left-handed.

Parson, writing in 1924, was of the opinion that eyedness preference was at the root of choice of hand—he claimed that eyedness was the cause and handedness merely the effect. Parson said that vision is most important throughout life, and that it is an obvious advantage to have the sighting eye and the preferred hand on the same side. This of course still left him with the problem of explaining eyedness. In any case, the facts did not fit in with his theory. Two objections were raised to it.

1. On retesting with the instrument Parson had used Cuff found there was a considerable amount of crossed dominance, i.e. right-eyed and left-handed or left-eyed and right-handed. Parson apparently ignored all cases which did not fit in with his theory.
2. Ballard found that the proportion of left-handedness is as high in the congenitally blind as in the normal population, which disproves Parson's theory, for in this case handedness preference must obviously be independent of vision.

Most people now hold the view that there is no connection between eyedness preference and handedness, though some say that it is better to be right-eyed and right-handed or left-eyed and left-handed than of crossed dominance.

The preferential use of one foot is more evident in leisure occupations involving kicking, hopping and the like. There is a trend similar to that in handedness, the majority being right-footed, and a small minority left-footed.

Ways of Measuring Handedness

Numerous different tests have been used in studies of handedness. Some investigators have attempted to find one reliable test, and use that alone. The majority have actually used a battery of tests, and tried from that to build up a composite picture of handedness. In early studies, where a comparison of handedness and some other factor was being made, the hand used for writing was often the criterion. It is evident

that this is not a very reliable measure of handedness, since in so many cases pressure was brought to bear, and no free choice was actually made. An astonishing number of prospective left-handers have been diverted to right-handedness, at least in writing. In some cases the change-over was made before school age, while in others either the infant-teacher or some later teacher forced the child to conform to the majority.

Tests of handedness which have been used all seem to fall into one of these five sections:

1. *Speed*: Some test is devised to measure the relative speeds of the two hands.

2. *Accuracy*: In such a test a measure is made of which hand is the more accurate in its movements during a controlled test situation.

The danger of using either speed or accuracy as a measure is that training of the right hand in a naturally left-handed person is likely to influence results in such a test. In fact it may be impossible to discover in such a test that the person has originally been left-handed.

3. *Strength*: Many early investigators used a dynamometer or some similar measure and compared the strength of the two hands. It is now realised that relative strength of the two hands has little or no connection with the preferred hand.

4. *Preference*: Many tests involve finding the preferred hand. This can be done by such methods as a questionnaire in which are listed all the types of activity in which one hand is used in preference to the other. The subject has then to fill in which hand he would prefer to use in such situations. If carefully drawn up, some questionnaires can yield valuable information, but there are many dangers in their universal use. It is an easy method of gaining information, little time being required in its application. Often, however, this is only a transfer of time, since a considerable amount of work is then involved in scoring.

A more satisfactory method of deciding handedness preference is to decide on a limited number of *important* activities where one hand is used in preference to the other. The next stage is to devise tests whereby this preference can be measured. Preferably this should be done without the subject realising what is actually being tested, for otherwise results may be distorted. For example—say I wish to discover which hand a persons uses in throwing. If I ask him, the danger is he may not be sure. This is specially true with children. Alternatively I can say, "Take this ball and throw it. I want to see which hand you use". The danger here is that he may choose one or other to oblige, or because he guesses that you want him to use it, though it may not be the one he usually uses.

The third method is to say perhaps: "Here are three balls—I want to see if you can throw them all into that basket." Here attention is

Left-eyed subject looking through cone.

Van Riper Laterality Board.

directed to the task of getting the balls in the basket—but what we note is which hand is chosen.

5. The remaining type of test was devised about 1930 by Van Riper in America.

Van Riper's Test

In the older tests, any who did not come out as definitely right or left-handed, were either omitted altogether, or put on the side of the hand most often preferred. In either case they were regarded as being a nuisance, and of little interest. Van Riper tried to devise a test which would measure native handedness.

He said that an adequate test of handedness should fulfil certain requirements.

1. It should show striking differences, and little overlapping;
2. Have a high degree of reliability;
3. Avoid as far as possible the skills susceptible to previous environmental training;
4. Show degrees of laterality if these exist.

His original test involved drawing a pattern with both hands at the same time on opposite sides of a vertical board.

The Van Riper Laterality Board is an elaboration of that idea. The principle of the method is that if a person is asked to draw a design with both hands at the same time, and is not allowed to watch what he is drawing, then one or other of the hands finds the task impossible and draws a mirror image of the design. This is the non-dominant hand. The two boards on the Van Riper apparatus are vertical, and are so arranged that they can each be rotated through 90°. The method is to start with the boards parallel to the chest, and gradually angle them away from the body, thus making the task more and more difficult. This is continued until a point is reached at which one hand reverses the diagram, that is, draws a mirror-image of it. That point is regarded as the Critical Angle, and the hand which continued to do the diagram correctly is the dominant hand.

This test appears to be able to pick out those who are natively left-handed, even if they have been forced to use their right. It is extensively used in America, and several clinics in Glasgow also possess the apparatus. It is quite different from any of the other tests I have mentioned, and appears to give some valuable results. An interesting development made possible by this test was the discovery of a group who might be termed equipoised. Though they use their right hand, it has not achieved a definite dominant lead. There is scope for research in a study of this group, since it is possible that they may have considerable educational difficulties.

Speech and Handedness

Many arguments have taken place around the question of the connection between speech and handedness, and more especially between changed handedness and stuttering. These arguments usually centre on whether or not a left-handed child should be forced to use his right hand, and the possible dangers resulting from such action. It appears doubtful that the mere fact of changing from use of the left to use of the right hand will, in itself, be sufficient to cause stuttering. The danger seems to arise from the methods adopted in bringing about the change, and the emotional stress which usually results. There seems little harm in *encouraging* a child to use his right hand for writing in preference to his left, provided he is only slightly left-handed, and that the method is one of encouraging only, and not of forcing. The old-fashioned method of tying the left hand out of reach or of hitting it every time the child attempts to use it—a method still in vogue to-day—is extremely dangerous. Many left-handed adults have vivid recollections of methods used at home or at school to break them of the habit.

At one time people believed that left-handedness was a sign of mental deficiency, and many parents attempted to hide the fact.

"Though left-handedness has never yet been classified among diseases, yet a most striking feature is the intolerance shown towards it. But this attitude is directed only towards children. Once the individual has been able to weather the storm of disapproval from parents and teachers, he is left alone, and may even be commended if the left-handedness be applied to games. In cricket, especially, we like a left-handed bowler or batsman on our side, for he has a sphere of usefulness which no one else can fill." (W. S. Inman, 1924.)

It appears that a tendency towards stuttering may be present in certain families, but provided there is little emotional stress the child may never stutter. In other words, some children will be brought to stutter more easily than others. This means that in some children it would not affect their speech to change their handedness, whereas with those nearer the borderline of stuttering, the emotional stress might be sufficient to start the trouble. Thus, though it is not a general rule that changed handedness will always result in stuttering, in specific cases it may. It is therefore safer to leave well alone, unless there is some necessity for change of handedness.

It seems that certain periods are critical with regard to speech development, and attempts to change handedness at these ages may have adverse effects on speech. It would appear that it is desirable for the child to develop dominant handedness as early as possible, and anything which delays that is bad. Thus, where children are very late in speaking, it has been found that they have not developed dominant handedness. In

such cases both Orton and Travis, two Americans who have studied the problem, advocate training handedness as an important factor in assisting speech development. It is not clear just what is the connection between retarded speech and lack of handedness dominance, and it is possible that they are merely two symptoms of a type of retardation.

Cases are mentioned by Orton where attempts were made to alter handedness at a critical period when speech had begun to develop, at say three years of age, and speech was brought to a standstill.

Speech and handedness do appear to be closely connected, and they are controlled by the same side of the brain. It is generally found that an injury to the left side of the brain will affect speech in a right-handed person, while injury to the right side may leave it unimpaired. In many cases handedness is used as a guide by the surgeon in deciding which side of the brain has been affected. If the person is left-handed, and speech is impaired, then the injury is probably in the right cerebral hemisphere. In some cases this is his only guide. However, it is not an invariable rule—cases have been found where a person was right-handed and right-brained. It is also very doubtful whether there is any change in the dominant side of the brain if handedness is changed over after speech has developed.

" That there is an intimate connection between language control and unimanual skill is well established, especially where writing is concerned. Essentially no difference in capacity exists at birth between the major and minor hemispheres. A tendency to right-handedness is really a tendency to left-brainedness, the brainedness coming first. It seems that the non-dominant hemisphere is not unused, as was once supposed. For some individuals it plays an important part. For all its functions to some extent." (L. C. Smith, 1949.) This remains a very controversial subject in the medical world.

Educational Implications of Left-handedness

Claims have been made in the past to the effect that left-handed children are inferior in all types of ability.

Wittenborn states more clearly than most the implications of left-handedness. He writes that it " has as a consequence a slight but nevertheless consistent handicap . . . the nature of the handicap is conceivably the result of two factors—mechanical inconvenience and emotional consequences." Both these factors come into play to a greater or less extent in the school subjects.

It must be admitted that many difficulties confront the left-handed children in learning even the mechanics of writing.

1. Lack of expert tuition, or even guidance of any kind, means that a left-handed child merely copies with the left hand the motions of the

other children, many of which should be reversed.

2. The direction of motion, with reference to the body axis, involved in writing, is an awkward one for the left-handed child. The motion for the right-handed child is away from the body, while it is in towards the body for the left-handed one. Without suggesting the motion, ask a left-handed child to rule a line—he will almost invariably rule from right to left, revealing his natural directional movement.

3. A comfortable position for pencil or pen, in preparation for writing, is easy to acquire with the right hand; not so for the left, unless one were to write from right to left.

4. One has to be left-handed to realise the difficulties which face a sinistral in writing in ink—especially with a plain pen. The ink-well is on the wrong side of the desk, and when writing, a left-handed child has to draw his hand across what he has already written. The sharp pointed nibs commonly used in schools are quite unsuitable for left-handed children, who push a pen where a right-handed child would pull, and are therefore inclined to make holes in the paper.

It is admitted that at least 4 per cent. of the population is left-handed, and yet little attempt is made to help them with writing. Burt mentions the difficulties which must be faced by a left-handed pupil, and also stresses the need for teachers to recognise the difficulties and give guidance.

Those who are not really good with the right hand or left, but who use their right hand because everyone else does, are probably in a much worse position than the extreme left-handers. It would be both interesting and profitable to carry out an extensive research on the writing difficulties of such a group as tested by the Van Riper apparatus. It might reveal a method for improving handwriting in the schools. In these cases, the most useful method of improving their writing would be a course of games, exercises, etc. intended to strengthen the dominance lead of one hand, choosing for training whichever is slightly dominant.

Mirror-Writing

I should like to add a few words about mirror-writing, as there have been many erroneous views expressed on that subject. It has been found that left-handed children are more facile mirror-writers than their right-handed fellows, which is to be expected, since a right to left direction is more natural to them. Left-handers should, therefore, be carefully watched in the early stages of learning to write, to make sure that they do not acquire the habit of mirror writing, or at least that it does not become fixed. It is not a sign of mental retardation in a left-handed child, especially in the early stages when the child cannot read all he

writes. Parents and teachers are apt to regard it as such, and thus create in the child an emotional attitude towards writing, which may develop into hostility towards all school work.

In conclusion, it is clear that a wide field is covered by problems connected with left-handedness, and that research on these subjects is not of purely academic interest. Study of left-handedness is of practical importance, and has a direct bearing on problems in clinic and school, no less than upon the daily activities of many children and adults.

References

Beeley, A. L. (1918) *An Experimental Study of Left-handedness.* Univ. Chicago Press. (Quotes Ballard).

Burt, C. (1937) *The Backward Child.* Univ. London Press.

Downey, J. (1945) *Laterality of Function.* J. Applied Psych., **29**, 83-88. (Quotes Cuff).

Inman, W. S. (1924) *Inquiry into the Origin of Squint, Left-handedness and Stammer.* The Lancet, 1924, **2**, 211-215.

Orton, S. T. (1937) *Reading, Writing and Speech Problems in Children.* Chapman and Hall.

Parson, B. S. (1924) *Left-handedness.* Macmillan Co., New York.

Van Riper, C. (1934) *A New Test of Laterality.* J. Exper. Psych., **17**, 305-313.

Van Riper, C. (1935) *The Quantitative Measurement of Laterality.* J. Exper. Psych., **18**, 372-382.

Smith, L. C. (1950) *A Study of Laterality Characteristics of Retarded Readers and Reading Achievers.* J. Exper. Educ., **18**, 4, 321-329. (The quotation is from the full Doctor's Thesis, of which the article is a summary.)

Travis, L. E. (1931) *Speech Pathology.* D. Appelton Century Co.

BIOGRAPHICAL NOTES

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HOME HELPS AND HEALTH EDUCATION

By E. B. Berenice Humphreys, M.B., Ch.B., *Maternity and Child Welfare Medical Officer, City of Leicester.*

The Home Help is the latest addition to the ambassadors of health provided by a Local Authority. The very nature of her work and the sphere of her activities bring her into close and intimate contact with the daily routine of the life of the family to whom she is sent, and no other social worker has greater opportunities for educating the members of the household in the pursuit of good health.

Problems

The health problems encountered by Home Helps may be concerned with defects in the dwelling itself, and the use or disuse of the amenities available in the house, or more personal aspects of the welfare of a family, such as food, clothing and daily habits. In addition, coming as she often does into a family at a time of emergency, there is sometimes revealed to her, as to no other social worker, the conflicts and the continuous mental strain under which some members of the family have been living for a considerable time.

The House

The problem of the insanitary house is comparatively simple. The good Home Help is quick to observe the defects : gross infestation which all too often is accepted by the family as inevitable, leaking roofs and leaking pipes, numerous broken windows or windows which will not open, faulty floors and staircases which are dangerous particularly for children and for old people, cooking and heating appliances which have become inadequate or unsafe ; these are some of the problems which a Home Help meets in her daily work.

The work of a Home Help often takes her into a modern dwelling in which the latest appliances for the convenience and comfort of the housewife and her family have been provided. Too often she notices that the fullest use of these domestic aids is not being made because of prejudice or lack of information about their true value. The slum dweller transferred to a new housing estate is often at a great loss when confronted for the first time with electrical appliances, a hot water system or even a bath. Similarly, to be provided with a dwelling which can be adequately ventilated does not mean that these facilities are properly

used. Such problems are at once obvious to a good Home Help.

The Family

It is when the Home Help begins her work of providing and preparing meals that she becomes aware in more detail of the lack of knowledge of so many housewives concerning economical yet nourishing food. The contents of the larder and the daily or weekly budgeting quickly show her where the difficulties lie. In the same way she will soon find out whether the members of the household are accustomed to regular meals served in an appetising and orderly manner, or whether tea and cakes and jam are often the menu at the main meal. Again, in the matter of clothing, ill-fitting shoes, and outer and under garments which no longer give adequate warmth and protection soon catch her observant eye. She may also note that the personal habits, particularly of the younger members of the family, reveal a lack of training in the elementary principles of hygiene. She will sum up in a day those problems connected with the physical well-being of the family under her care.

Personal Relationships

Strained family relationships often come to the surface when the household is under the stress of domestic emergency which leads to the calling in of the Home Help. The neurotic wife, the repressed or over-indulged child, the selfish husband, the dominating mother-in-law will all react in their several ways to the situation and will present very real, if somewhat intangible, problems to the Home Help whose concern it is to restore the smooth running of the home. She cannot be long in intimate daily contact with a family and remain insensitive to those cross-currents which affect the mental and emotional life of its members. It is to the Home Help rather than to the social worker who pays an occasional visit that they will be revealed.

Remedies

In attempting to overcome all these difficulties, the Home Help can be an important and vital instrument in the health education of the family and particularly of the housewife. Defects in the dwelling itself will be reported to the Home Help Organiser who in turn will refer them to the officials concerned with their remedy, but the Home Help is often required to deal with the difficulty herself when as a result of her action landlords or their agents visit the dwelling.

Concerning the proper use of facilities and amenities available, the Home Help by quiet practice can educate the inexperienced or prejudiced housewife to take full advantage of the benefits which her new house affords. Also in the matter of budgeting and preparing appetising and

adequate meals, her quiet and tactful example will exercise the right influence upon the family, who can be encouraged to come punctually to meals and will soon learn to appreciate good food well served.

With regard to clothing, the Home Help may often be able to suggest ways by which economies can be affected in expenditure, and also teach the mother how to do simple sewing and mending, thus enabling her to make and keep garments in good repair, and keep her family adequately provided with clothes to wear and clothes to change, even on very limited means.

Personal habits are more difficult to correct, especially in the old, but even in her comparatively short stay the Home Help may be able to influence the younger members of the family in good habits of personal hygiene. When she has to attempt this form of education while the mother is still in the home, the Home Help needs to be specially careful to avoid giving any impression of criticism or condemnation.

When there are difficulties due to strained personal relationships, the task of the Home Help becomes much more complex and calls for infinite patience and tact. It is in this sphere that the quality of character of the Home Help is put to the greatest test. She will regard it as a privilege to have won the confidence of the members of the family in this matter ; her discretion and integrity must be beyond reproach if she is to hope for any measure of success in adjusting these personal difficulties. Being alive to the detrimental effect on physical health of emotional conflict, she must have a fund of wisdom, through experience, to enable her to bring about any improvement in this vital matter. She may be called upon to listen to an account of domestic estrangements, difficult sex relationships and maladjustments, and by her patient hearing may prepare the way for a frank disclosure of the underlying source of these difficulties and perhaps for their reference to a person specially qualified to deal with them.

Conclusions

This brief account of the health problems which the Home Help encounters in her daily service, and the means by which she attempts to solve them, will serve to indicate the importance of the contribution which this newest social service can make to health education in the home.

It remains for all Local Health Authorities through their personnel to ensure that, by careful recruitment and adequate preparation, this vital work is entrusted to women who are not only competent as home makers but who, by the quality of their character and by their personal integrity, can be relied upon to exert a lasting influence on the physical, mental and spiritual well-being of the family.

INDUSTRIAL ACCIDENTS*

PART I

By R. S. F. SCHILLING, M.D., D.P.H., D.I.H.,
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THERE is a yearly toll in British mines and factories of a thousand workers killed and 350,000 injured seriously enough to be absent from work for more than three days. These are the accidents which by law must be notified. There are hundreds of thousands more minor accidents causing suffering and interference with production. The incidence of minor injuries is not accurately known, but according to Vernon (1945) there are in industry as a whole, probably forty minor accidents for every reportable one. With a yearly incidence of approximately fifteen million minor injuries, and over a third of a million more serious injuries, the accident menace to our industrial community is serious. Accidents reap their toll in the whole community. A yearly incidence of over 7,000 killed on the roads, in the home, and at work is indeed a heavy price to pay for the higher standards of living in a machine age. We pay this price too meekly, and future generations may well look back on our times as critically as we do on the nineteenth century with its visitations of cholera and epidemics of typhoid fever which were accepted as inevitable by the early Victorians.

In industry attempts have been made with some little success to counter the adverse affects of increased mechanisation and speed of work by adopting the principle of making the machine as safe as possible: putting a fence round the dangerous ones; making cranes, chains and ropes used for lifting strong enough to carry their loads; ensuring that boilers and steam containers are made and used so that they do not burst; and so on. Standards of safety are promulgated by the Factories Acts and from time to time are raised by the passing of a new Act demanding higher standards. The Factories Act (1937) which superseded the old Factory and Workshops Act of 1901 embodied the learning and experience of thirty-six years.

The elasticity of previous Acts essential to cover the enormous variety of conditions in the whole of industry was secured by framing the requirements in general terms. The Act of 1937 was an innovation in that requirements for safety were made precise and detailed and the necessary

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latitude was allowed by powers of exemption for plants or processes where this detail and precision would be inappropriate.

It was hoped that the ultimate effect of this change would be a marked reduction in fatal and non-fatal accidents. Mechanisation spurred on by the demands of war increased its speed and brought new dangers. The yearly accident rates in factories since 1928 (Fig. 1) show that better safety devices and practices have only stemmed the tide. There has been no dramatic reduction. In the war years the rates for all classes of worker rose probably because of the introduction of new factors not directly concerned with the machine, such as longer working hours, fatigue, strain, the black-out, and the influx of the less fit, unstable, and inexperienced person into factory life.

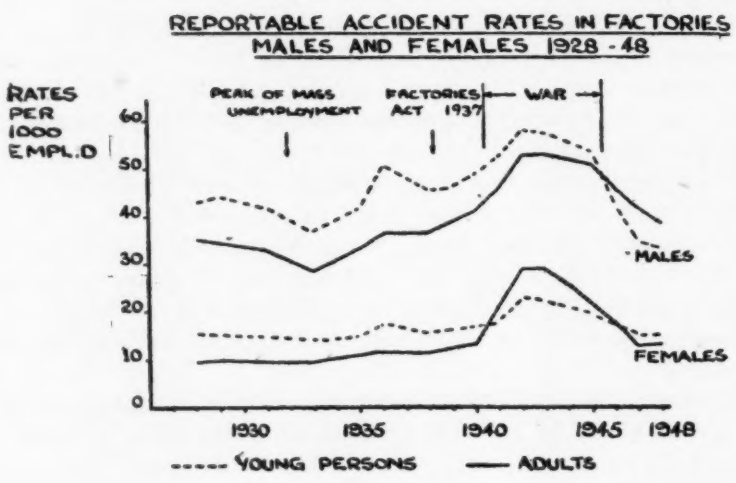

FIG. 1

The decline in the accident rates of male young persons since 1945 is probably due to the raising of school leaving age and the compulsory attendance at continuation classes introduced by the Education Act, 1944. These changes have lessened the time of exposure of all young persons and kept the younger and more irresponsible out of danger.

In Great Britain and other highly industrialised countries only 10 to 20 per cent. of all accidents can be ascribed solely to mechanical causes. The bulk of accidents are caused by personal qualities or rather a lack of

them in the person sustaining or causing the accident, such as youth, inexperience, fatigue, ill-health, worry, unsuitability for the job, or accident proneness due to clumsiness or what is technically called poor sensori-motor co-ordination. These factors are extremely difficult to control without imposing some distasteful restrictions on the liberty of the individual. The law has therefore adopted the principle of making the machine as safe as possible for the clumsy and nimble alike. This is Legge's principle for the control of industrial disease: " If you can bring an influence to bear external to the workman, that is, one over which he can exercise no control, you will be successful; and if you cannot or do not, you will never be wholly successful."

That it is not possible to impose such a principle universally is shown by the sustained level of accident rates over many years in spite of higher standards of safety. Attempts to make the work so safe have in some instances interfered with the efficiency of the worker. Mark Benny (1946) expresses this point dramatically but clearly through a fictitious colliery manager who had a lively mind and a passion for argument.

> " Look at your mining inspectors, they all know that the essentials of safe mining are good roads and good ventilation. But do they use their power to improve them ? Not a bit of it. They ignore fundamentals and feed on superficialities, and what's the result ? Mining machinery is crusted over with the rubble of costly devices till they get into the state of the pre-historic monster—so safe they won't function. So the manufacturers cease to try to sell their machines on their efficiency, and sell them on their safety."

Industry largely depends for its safe standards of work on the manufacturer of the machine and the Factory Inspector, and how wisely the inspector enforces the law. The number of inspectors is too few to pay routine and thorough visits to all factories. They have to depend largely on their investigations of reportable accidents and correcting breaches of the law and other defects to ensure that similar accidents do not occur. It has some good effects but it is often being wise after the event. Factory communities can help themselves in their own safety problems and the Factory Inspectorate with their quite unique experience of accidents have been one of the strongest protagonists of this principle of industry helping itself and using the inspectors for expert guidance. Industry has opportunities for promoting safety which an outside expert can never have. It has or can have an intimate knowledge of its processes and their dangers, of its workmen and their frailties. It can observe in detail the causes of its accidents whether they be mechanical or personal in origin. It is only by these detailed observations that industry can overcome the many fallibilities of a law which attempts to lay down standards for all places at all times.

Minor Accidents

Our knowledge of the ætiology and means of preventing diseases such as typhoid fever and diphtheria has come from a study of all cases, not only fatal ones. All accidents, not only the more serious ones which have to be reported, must be studied if the epidemiology of accidents is to be more fully understood. An analysis of the accident records of some 14,000 workers comprising several different trades has shown that in most of the trades, those who have had an undue number of minor accidents also had an undue number of major accidents. This implies that the causes of minor and major accidents are principally the same, and any efforts made to reduce minor injuries will have a beneficial effect on the incidence of the more serious injuries. There are no special difficulties in recording minor accidents. Any community which provides a treatment service at work collects these records automatically. All that is necessary is to record the name and works number of the injured person, his or her job, the injury received and how and when it occurred and the treatment given. It is never possible to record all minor injuries as some will not be considered by those injured to need treatment; but if the treatment offered is of a high standard, courteously given and readily accessible, the necessary minor accident experience will be available.

William Osler said, "*If you have the good fortune to command a large clinic, remember that one of your chief duties is the tabulation and analysis of the carefully recorded experience. Keep and compare your observations, study them, tabulate them, seek the points of contact that may reveal the underlying law. Some things can only be learned by statistical comparsion.*"

No clinic offers better opportunity for following this advice than the treatment room in industry.

Accident Liability of Departments and Classes of Work

A simple analysis of minor accidents can indicate the accident liability of departments or of particular classes of work. Other factors being equal, the large departments will have more accidents, but if the numbers employed in each department or on certain jobs are known, accident rates can be calculated and indicate the dangerous departments or tasks, thus avoiding the false impressions given by total numbers of accidents. Further analysis can indicate the nature of these accidents or of the liability of certain age groups or classes of worker. Two simple examples illustrate the value of such analyses.

In one factory it was found that the incidence of "arc eye" from electric arc welding was high but that the majority of cases were occurring not among welders but among their assistants, who were found to have little or no protection for the eyes. This fault which had been overlooked for several months was thus detected and corrected.

Whitfield (1946) investigated haulage and pit bottom accidents to coal miners in six seams of collieries belonging to the same company. Although he analysed only those accidents for which a compensation claim was entered because the necessary data on the minor injuries was not recorded, the methods of this analysis can be applied to records of minor accidents. The observed number of accidents and the expected number of accidents calculated from the overall accident rate per man shift were compared. In one seam the accidents observed were considerably less that the number expected. In this seam two important environmental factors were noted. The pit bottom was more spacious. The main uncoupling point was on a curve, and with tubs on a curve the inside buffers come into contact and leave a safe working space on the outside for uncoupling. If these conditions had prevailed in the other five seams a reduction of 35 per cent. in the accident rate would have been expected. The causes of such injuries may be lost under the usually vague and unorganised conditions of human observation or they may be hidden in accident records and only found by applying simple statistical techniques.

References

Benney, Mark (1946). *Charity Main.* George Allen & Unwin Ltd.

Vernon, H. M. (1945). *British Journal of Ind. Med.* | **2** 1.

Whitfield, J. W. (1946). *Medical Research Council. Applied Psychology Research Unit Rep.* No. 36.

BIOGRAPHICAL NOTES

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NUTRITION COMMENTARY

THE *Nutrition Bulletin*, hitherto issued as a separate publication, will from now onward be incorporated in the *Health Education Journal* in the form of a regular Nutrition Commentary. As in the present instance, the Commentary will often include articles from contributors on recent advances in research and application, and on various aspects of nutrition education.

Nutrition and the Consumer

The article below by Dr. H. E. Magee shows some of the practical bearing of contemporary nutrition research upon the health of consumers. He states a few facts of which the health educator should be broadly aware. But how much does the average consumer need to know about these facts ? The more he knows, the better; yet so long as health authorities can protect him against dietary deficiencies, whether under normal- or abnormal conditions of life, he scarcely needs to be an expert on the precise nature of vitamins and amino-acids. The following comment suggests some of the relations that should exist between the protective regulations and measures adopted by health authorities and the day-to-day work of the health educator, so far as this is concerned with the choice of a diet and the understanding of food values.

Labelling and Advertising

There is an aspect of food education that has been so far neglected. Consumers are largely unaware of the measures taken over the last ten years to establish standards for manufactured foods and to ensure that there shall be no misleading claims made on labels or in advertisements. It may be said that there is little need for the consumer to pay attention to such changes in marketing practice. But there are at least three reasons why he should. If food labels now tend to give correct information about the contents and value of packaged food, then the consumer had better be taught how to read his labels. Secondly, the more it becomes the practice in commercial advertising to tell the truth, the more reliable is advertising as a medium of food education. Finally, the process of reform is far from complete; it is moving in the right direction, no doubt, but it now needs to have the good sense of the public behind it.

The Risks of Civilised Food

Let us reduce the problem to its elements. In an urban civilisation an increasing proportion of all the food consumed is stored, transported, processed, manufactured, preserved and packaged. It is sold commercially for a profit; and it therefore becomes the business of manufacturers and retailers to commend the foods they sell to likely purchasers. Many risks are involved. The primitive hunter, food-gatherer and cultivator does not have to face these risks, however else he may be at a disadvantage from droughts and scarcities. What, then, are the risks? There is the risk that dealers may be tempted to adulterate food and so lower its nutritive value; that they may use chemical preservatives and "improvers" that are in the long run deleterious to the health of the consumer; that important nutrients may be lost in milling and canning; and that the consumer may be grossly misled about the real value of a food.

Now, the consumer cannot in most cases tell whether the food is what he thinks it ought to be. Some public agency has therefore to be set up to protect him against fraud and malnutrition; and this, in fact, is what has progressively been happening in all civilised communities during the last century or so. Regulations are issued and enforced, standards prescribed and food samples inspected.

These protective measures on the part of Governments do not, of course, take the place of food education. But they are a necessary accompaniment of all satisfactory food education, because (*a*) as I say, the consumer may know vaguely what he needs but cannot be expected to judge whether the food purchased will provide him with it, and (*b*) the food educator has hitherto had to compete to some extent with the appeals and blandishments of food labels and advertisements. It greatly facilitates his work if he and the food advertisers are both expounding the same truths.

Recent Progress

It is now necessary for us to include in our food education some instruction on the regulations issued by the Ministry of Food. These regulations concern labelling and advertising, the standards of quality, the claims made about the vitamin and mineral value of foods and the use in food of various chemical preservatives and "improvers". It is possible, indeed, that the work of the Ministry's Food Standards Division represents the most permanent and salutary of its achievements.

So far as this is the outcome of co-operative effort between the Ministry, the food manufacturers and the consuming public, the achievement is a very real one. For, even if food advertising has not yet received the close attention given to food labelling, its time will undoubtedly come. The co-operation seems to have been remarkably frank. A very large

number of labels and advertisements have been voluntarily submitted to the Ministry's experts before being issued; and the criteria adopted by the Ministry have in the main been readily accepted.

Patterns of Reform

A few examples will indicate the general policy of the Ministry. Some packets of custard powder used to suggest either by words or by pictures, that the product contained eggs or cream; after consultation with the manufacturers these claims have been removed. The same applies to such terms as " egg powder " and " egg substitute " when used for coloured baking powder; the product has now been renamed " golden raising powder " or by some such term. No less drastic has been the agreed change made with " lemonade powders " and similar products that contain no fruit juices at all.

It was noticed by the Ministry's experts that many of the labels must have dated back to late in the last century, when many unjustifiable claims were being made. For instance, a gravy thickener consisting of flour and colouring matter was described as " one of the finest and most useful foods ever invented by man ". A similar gravy powder was falsely stated to contain " all the B vitamins ". Foods consisting primarily of flour were described as " a food that saves life " and " expels disease for ever ". Other foods were recommended for specific diseases; and this is now altogether forbidden by law, unless the foods are recognised medically to possess certain properties. In this sense the term " digestive " has been eliminated wherever it misled the purchaser; such phrases as " digestive flour ", " digestive tea " and " digestive suet " (for there was even a digestive suet on the market) have all disappeared. The word " tonic ", too, is now considered to be misleading in most cases. There must be by agreement no claim suggesting that a meat extract contains all the properties of the meat itself.

While claims that a food contains vitamins or minerals must be accompanied by a precise statement of the quantities, the Ministry and the manufacturers have now gone somewhat further. No statement must be made that the food is a " good " or a " rich " source of the nutrients in question, unless the amount of the food normally consumed in a day would provide a man with a fair proportion of his daily needs. This, of course, gives added protection to the consumer, who cannot be expected to judge of the value of a product from the technical description of vitamins and minerals.

The Ministry has explained the various orders and regulations in its so-called Yellow Book, which is, incidentally, being revised. What we now require is a short, popular and readable version, that could be distributed among the public, particularly among the women's organisations.

SOME RECENT ADVANCES IN NUTRITION

By H. E. MAGEE, D.Sc., M.R.C.P.,
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THE advance of science is, in many ways, like the progression of the amoeba. At times the whole animal moves in one direction, slowly and uniformly; at others it advances rapidly in one sector by throwing out a pseudopodium or two while the whole animal moves forward more slowly. The science of nutrition also conforms to this pattern. At one time it was the field of energy which attracted most attention, at another it was proteins, at another carbohydrates, then the fat soluble vitamins and mineral salts came in for intensive research. This is not to say that the mass of the amoeboid body was not at the same time advancing towards more extensive and more precise knowledge of the whole subject; it has been advancing steadily since the modern science of nutrition began, about half a century ago, and at present a few pseudopodia can be discerned at the front of the advancing mass. In this paper I propose to try and bring out the meaning and import of what I conceive to be the more important of these points of advancement. They are concerned with proteins, intravenous alimentation, vitamin B12 and under-nutrition.

The Essential Amino-acids

The new discoveries in the chemistry of the proteins, which have given us an insight into the structure of the protein molecule, have been followed up and exploited; and by none to greater profit than Rose of the University of Chicago. He and his colleagues have shown during the past fifteen years or so that some eight to ten amino-acids are indispensable for the proper nutrition of man and certain other animals. This means that if one or more of these essentials is missing from the diet of an animal it will fail to grow, will lose weight, and eventually die. Cannon, in the same University, has shown that, to be effective for the growth and maintenance of the body, all the essential amino-acids must be consumed at approximately the same time. For instance, when animals were given all but one of the essential amino-acids at one feed and the remaining one several hours later, they began to suffer from starvation, even though the diet as a whole contained sufficient of all the essential nutrients which, when given to the animals as a complete mixture at every meal, supported

normal growth and health. More recently it has been found that, if the whole of the carbohydrate part of an adequate diet is fed separately from the remainder, the animals will also waste and die from protein starvation; but, when the carbohydrate is given at the same time as the rest of the diet, the animals live and flourish. The reason for this phenomenon seems to be that, in the absence of carbohydrate, the tissues of the body seize upon the next most assimilable energy-yielding foods, namely, the proteins, and break them down for energy purposes. These discoveries may not seem to have much practical significance at the moment, but it is obviously important they they should be borne in mind in the preparation of simplified diets for invalids or in the assembly of concentrated food packs for emergency purposes, *e.g.*, for people adrift on rafts or marooned in desert places.

The essential amino-acids are found in all common animal proteins and in proportions similar to those existing in the human body. It is this characteristic which gives to animal protein its great importance as a constituent of human diets. Although very desirable, animal protein cannot be regarded as indispensable, because all the essential amino-acids can be obtained from mixtures of commonly consumed vegetable proteins such as a combination of wheat and beans or peas.

Intravenous Alimentation

The discovery of the importance of the essential amino-acids was soon exploited in clinical medicine, first of all by Elman in St. Louis. He was the first to administer hydrolysed proteins by vein to human subjects. Protein hydrolysates, combined with glucose, have been extensively used in North America for the past eight years or so in the treatment of patients who are unable to ingest food or assimilate it when taken by mouth. The method has not gained much popularity in Europe, although there is available in this country at least one hydrolysate of proved value. The commonly used preparations consist of five per cent. of protein hydrolysate with five per cent. of glucose, concentrations which have been found by experience to be the most easily tolerated; but not more than about four litres of the solution can be administered in 24 hours. Attempts to use higher concentrations or greater quantities have resulted in extensive losses of the nutrients by the kidney. Experience has shown that about 1,600 calories per 24 hours is the maximum that can be injected into an adult male patient. The limits of injection for persons of smaller bulk are, of course, proportionately smaller. This amount of energy is far below the requirements of an adult man, who in a state of rest would require about 2,200 calories daily. Because of this energy deficit much, if not all, of the injected amino-acids are almost certainly utilised for energy purposes, so that the true purpose of injecting the protein hydro-

lysates, construction of tissues, is not achieved. For maximum success, the great bulk of the energy requirements must be covered from non-protein foods, namely, carbohydrates and fats. As I have already said, it is not possible to increase the quota of glucose because of leakage through the kidney, so that fat emulsions must be used to achieve energy equilibrium. These would not leak through the kidney, but the fats injected would have to be readily metabolisable, and measures would have to be taken to ensure a state of division fine enough to preclude embolism.

In several centres in North America, researches have been vigorously pursued to find emulsions suitable for intravenous use. Much success has resulted, and reports have been published of the feeding of patients entirely by vein for periods up to ten weeks, using fat emulsions in addition to protein digests and glucose. More research will, however, be required before the preparation of fat emulsions can be put on a commercial basis.

Fat emulsions used intravenously have not been reported from any European country, but considerable progress has been made in preliminary laboratory research in Britain. Embolism is the great risk, and the dispersal must therefore be as fine as possible and the emulsions must be sufficiently stable to withstand sterilisation. Doubts as to whether emulsions made from fats entering into ordinary diets, *e.g.*, olive oil or butter fat, could be utilised by the body, have been removed by the results of tests with fats containing radio-active carbon (C^{14}). Radio-active carbon was detected in the carbon dioxide of the expired air of animals previously injected with fats containing C^{14} in the fatty acid chain or in the carboxyl group (COOH). Incidentally, the same technique has brought to an end, a short time ago, the old controversy whether fat is transformed into sugar in the course of metabolism; "labelled" carbon taken by mouth in the form of fat was later found in the blood sugar and in the liver glycogen.

The treatment of many human ailments is often hindered by inability of the patient to eat and assimilate enough food. In such circumstances the clinician's task is complicated by the presence of under-nutrition or even starvation. These difficulties should largely disappear when complete intravenous alimentation becomes possible. The portents are that it will be so before long, and then the clinician will possess a therapeutic weapon of great potentiality.

Amino-Acids and Immunity

The bodies found in the blood of persons in immune states have long been known to be of a protein nature. Within recent years some of these bodies have been found to be associated chiefly with the globulin fraction. Cannon of Chicago has shown not long ago that, when animals

are fed on purified diets, from which one or more of the essential amino-acids is missing, immunity is slow in developing and resistance against certain bacteria is much diminished. Cannon was not, however, able to show the effect of a missing amino-acid in normally fed animals; it was only animals previously depleted of protein which showed the decline in immunity. Therefore, while it is clear that the anti-microbial defence of the body depends *ultimately* on an adequate supply of suitable protein, dietary deficiencies are not likely to affect immunity seriously unless they are extreme. It has also been shown in protein-depleted animals that, when dietary energy is insufficient, the development of immunity fails, even if the protein consumption itself is adequate in quality and in quantity. The apparent reason is that the dietary protein is being used for energy rather than for a more specific purpose, tissue formation.

Proteins in Convalescence

For some time it has been known that after injuries or operations the body loses protein and weight for a period of variable duration and then begins to gain. The duration and degree of the former catabolic phase depends on the amount of tissue damage—the greater this is the more marked and the more prolonged is the loss of protein. Attempts to reduce this by high protein diets, although they have failed to check it completely, have nevertheless mitigated it. For this last reason high protein diets containing as much as 200 grammes of protein daily are now often given in post-traumatic and post-operative states. To achieve such high protein intakes dried skimmed milk has been found of great value.

Rest in bed has until recently been regarded as a sine qua non for reconstruction of new tissues. Investigations carried out within the past ten years have cast much doubt on this assumption. Indeed it has been shown that, when perfectly healthy people are confined to bed, they lose nitrogen and calcium. Doubtless the present vogue of getting patients out of bed as quickly as possible after an illness is an outcome of these discoveries.

Vitamin B12

From the time of the discovery by Minot and Murphy in 1927, liver extract has held the field unchallenged as the one dependable remedy for pernicious anaemia. In 1945 came the discovery and synthesis of folic acid. It was found to have good effects in some types of anaemia, including some cases of pernicious anaemia; but in other cases of pernicious anaemia, not only was no good effect observed, but in quite a number the nervous manifestations of the disease became aggravated. Mainly for this last reason, folic acid is now rarely used for the treatment

of pernicious anaemia.

Researches which have been proceeding for a number of years to isolate the anti-P.A. factor attained much success in 1948 by the discovery of a substance possessing anti-anaemic properties. This substance was isolated from animals livers and purified by Lester Smith in this country and about the same time by others in U.S.A. The substance, having been found to resemble the vitamin B complex in various ways, was named vitamin B12. Extensive clinical research has been carried out with B12 since that time, and it has been found to possess all the therapeutic properties of liver extract, provided it is administered by injection. Research work is still being vigorously pursued in several countries, and any statements made as to its identity, chemical and pharmacological properties and biological significance must therefore still be regarded as speculative to some extent. In respect to its relationships with the intrinsic and extrinsic factors of Castle, knowledge is becoming increasingly well-defined and certain. It would not appear from the evidence available that vitamin B12 is identical with the extrinsic factor, and the fact that it is not effective in P.A., when given by mouth, seems to indicate that the role of the *intrinsic* factor consists in making possible the absorption by the gastric and intestinal mucosa of the extrinsic factor. If these interpretations are correct, and there seem good reasons for believing them to be so, the haemopoietic factor would seem to be identical with vitamin B12 (or the extrinsic factor), and not with the combination of the intrinsic and extrinsic factors as postulated by Castle.

Vitamin B12 is unique amongst the vitamins in having a metal in its molecule—the "trace" element cobalt. B12, in fact, is the only biologically active substance containing this element. These discoveries have clarified to a great extent the role of cobalt in animal physiology. For about a quarter of a century it has been known that traces of cobalt are essential for haemopoiesis, and the disease characterised by anaemia and emaciation, which occurs in sheep in the southern counties of Scotland, and in certain other parts of the world in cattle as well as sheep, has been shown to be due to lack of cobalt in the pasture. The disease, which goes by a variety of names, is known as pining or vinquish in Scotland.

It was a matter of great chemical and practical importance when it was discovered that B12 occurs as a by-product in the manufacture of streptomycin. As the mould Streptomyces griseus grows it produces, amongst other things, vitamin B12. Practically all the vitamin B12 manufactured at present comes from this source.

Additions of B12 to the diets of pigs and chickens have been observed to promote growth at a somewhat greater rate than when normal and supposedly adequate diets are given. It had previously been shown that water-soluble extracts of animal proteins, including fish, also stimulate

the growth of animals fed on vegetable diets. One of the three or more constituents in these ill-defined extracts, sometimes known as "the animal protein factor", is B12. Tests have been carried out in U.S.A. to ascertain whether B12 makes children grow more rapidly, but although there are indications that it does, the evidence is too scanty to make any definite conclusion possible.

Some Effects of Dietary Inefficiency

A surprising thing common to all records of privation of food in European countries which have come to light since the war ended has been the absence of vitamin deficiencies. My colleagues and I saw much, and often very severe, under-nutrition in Berlin during the blockade. In spite of careful examination, however, including therapeutic tests of hundreds of Berliners of all ages at three-monthly intervals, we saw no definite evidence of vitamin deficiencies except a few (less than ten) cases of very mild rickets. It was quite otherwise in the eastern countries where the staple foods were rice and/or maize. In the Japanese prison camps, for example, there was much evidence of deficiencies of the B vitamins and, to a much lesser extent, of A.

Common features of lack of food, in the east as well as in the west, were at first irritability and then lack of interest, followed by apathy, lethargy, and lack of desire for any exertion, mental or physical. The development of these changes was usually accompanied by loss of weight. Keys and his colleagues in Minneapolis noticed the same sequence of changes in his 36 volunteers who submitted themselves to quite severe deprivation of food for six months.

When full or more adequate diets became available the mental state was the first to show signs of improvement. The mask-like expression, the dullness, the deliberate and slow movements, were replaced by alertness, mental and physical agility, and the desire to do things. Certain physical defects remained, however, for six months or more after adoption of an abundant diet, notwithstanding return of weight and apparently of general appearance to normal. The haemoglobin, and physical efficiency and endurance, which had fallen during privation, returned very slowly to normal in Keys' volunteers. My colleagues and I made similar observations on Berliners four months after the blockade had ended.

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FILMS

THE HUMAN SKELETON. 1951. PART I. STRUCTURE AND JOINTS. 16 mm. Sound. Black and White. 10 mins. On sale or hire from Gaumont British Instructional, Perivale, Middlesex.

By means of live action, animated diagram and cine radiography, the film shows the structure and position of the bones forming the skeleton, distinguishes between the axial and appendicular portions, explains the structure and functions of hinge joints, ball and socket joints, the slightly movable joints and the fixed joints of the skull. The shoulder, hip and elbow joints are treated in detail, the structure of a typical joint being illustrated by the hip.

The teaching method used can be highly recommended. Live action is followed by a fade-out and exactly replaced by cine radiography and finally by the bones shown in more detail. Production is excellent and the commentary slow and purposeful. It is a great relief to watch a film when every moment is not accompanied by sound, as the commentator merely speaks when necessary. Detailed teaching notes accompany the film.

It can be recommended for use with the middle forms of Grammar Schools and the two last years in the Secondary Modern School. A longer and more detailed film with the same general outline would be needed for Pre-Nursing Courses and Sixth Forms.

THE HUMAN SKELETON. 1951. PART II. MUSCLES, MOVEMENT AND POSTURE.

16 and 35 mm. Sound. Black and White. 10 mins. On sale or hire from Gaumont British Instructional, Perivale, Middlesex.

The same technique is used as in Part 1 to show the action of muscles in producing movement of the joints. Illustrations are taken from the raising and lowering of the forearm, the use of the respiratory muscles, the action of the antagonist and anti-gravity muscles in holding the body erect and maintaining balance during movement, and finally the structure and function of the feet in supporting the weight of the body.

Production and teaching methods are all that could be desired, and teaching notes accompany the film. The commentary is outstandingly good—unhurried and never superfluous. Frequent silences encourage concentration on the movement shown in the film. The pace is just right for children who miss so much when action is too rapid.

It can be recommended to all classes from about the age of 13 to 16, and Pre-Nursing students would gain by viewing it although the academic standard required by them is much higher.

ALCOHOL AND THE HUMAN BODY. 16 mm. Sound. Black and white. 10 mins. Hire or purchase from Encyclopaedia Britannica Films.

The subject is dealt with by means of animated diagrams and direct photography. Alcohol originates in fermenting carbohydrates, as in barley and grapes, and its chemical formula is C_2H_5OH. Animated diagrams show its dispersal after consumption to the stomach, liver, heart and brain. It affects the judgment, muscular and visual centres of the brain, and finally the cerebellum, which upsets balance. Close-ups of affected persons show the results of the intemperate use of alcohol.

The photography and diagrams are good and this short film provides an adequate explanation of the subject for young persons. It could be recommended for use with boys and girls of the age of 14 or 15 in schools and clubs. It should be emphasised that the use of moderate quantities of alcohol need not be deprecated.

L. E. H.

BOOK REVIEWS

HEALTH AND HUMAN RELATIONS IN GERMANY (H. K. Lewis & Co. Ltd. 1950. Pp. 208. Price 5s.).

This book is the report of a conference on Problems of Health and Human Relations in Germany, held in Princeton, June 26th - 30th, 1950. It was a gathering of social scientists and psychiatrists with recent professional experience in the Western Zones, representatives of three United States government agencies concerned with human relations, and representatives of two international organisations. Although most of the participants were from the United States, there were four Germans present, two Britons and a Frenchman. They met to combine their first-hand knowledge of German problems with their professional skill in an effort to formulate principles and recommendations of action that might be useful to the German people as well as to official and non-official agencies concerned with the rehabilitation of Germany.

The idea of holding a conference was conceived by Dr. J. R. Rees of London, Director of the World Federation for Mental Health, and put into practice by the Macy Foundation and other organisations.

In their first session the participants proposed for discussion a number of questions which they regarded as basic to the development of a sound workable relationship between the Germans and the peoples of the Western Nations. The questions fell into three main categories, the first of which dealt with German culture and personality. In this group were such questions as these: How have the German people come to be as they are? How could they accept Hitler? Why are Germans so intolerant of each other? What capacity for change is there in the German personality? What are the reasons for the present hierarchical structure of German society? What are the dynamics of German culture that are most potent in determining German parent-child, teacher-child and teacher-parent relationships?

The question of the German character has naturally occupied many workers in the field. Many attempts have been made to find a formula for the understanding of the German national character and to explain certain patterns of behaviour which are regarded as the result of a constant subjection of individuals to authoritarian controls in their family and community experiences. These behaviour patterns have persisted despite the traumatic experiences of the failure and defeat of the system and can be found in the daily relationships between children and parents, pupils and teachers, workers and employers and also in international relations. It is interesting to note that at a second conference on health and human relations at Williamsburg Lodge, Williamsburg, Virginia, (December 10th —15th, 1951), where a greater number of leading Germans participated, the conviction was expressed that any quick and over-simplified conception of the German character was a somewhat one-sided post-war document and that very careful co-operative efforts by historians, psychologists and sociologists, working closely together, were necessary in order to arrive at a more reliable picture of the German character.

A second group of questions concerned professional developments in German psychiatry, social sciences and education. Development of child guidance services, care of youth and development of the education-system are some of the questions within this sphere.

The third category dealt with the integration of the German culture within itself and into European and world cultures. What are the conditions under

which real communications can be developed between people of different cultures and different value systems so that each can help the other to new appreciations?

The three committees presented to the conference in plenary session their recommendations, which were discussed and finally approved. Some of the most important are the following:

Consultants sent to Germany should come from a number of the democratic nations. Germans sent abroad for observation should go to as many countries as possible, so that they may compare systems and methods used in several different places and choose what seems pertinent to them. It is recommended that a national institute of comparative education should be established in Germany to serve as a clearing house for information about educational matters in Germany and other countries. The development of child guidance should be encouraged. Mental health activities should be increased and developed for the benefit of adults. German parents should be helped to work towards the solution of problems affecting their children.

International understanding should be developed; careful consideration is necessary with regard to the persistence of racial doctrines in German thought, and to the protection of minority groups in Germany.

These recommendations, of which I have mentioned only a few important ones, close with the consideration that all planning for work with German people should be based on the realisation that the relationship between Germans and non-Germans should be one of mutual respect and responsibility, and that co-operation between them should be fostered by recognition of common problem areas in which work might be done concurrently in Germany and other countries.

I regard this book as a document of responsible and highly efficient work to foster international understanding between Germany and other countries and help Germany to regain her place among the nations of the world. This can be achieved only by means of mutual tolerance and co-operation.

Anyone who is interested in getting a complete picture of this most vital and significant conference should benefit by reading this book.

C. BOENHEIM.

PROFILE OF SCIENCE, by Ritchie Calder. (George Allen and Unwin Ltd. 1951. Pp. 326. Price 16s.)

Scientific research may involve long and sometimes wasted hours of work, painstaking observation, detailed analysis of results, computation and the checking of figures, reading many highly technical articles and writing others. How can such work as this be made to interest the man in the street ? Mr. Ritchie Calder's book provides an answer.

Mr. Calder's method is twofold. He portrays scientists, like Rutherford or Watson Watt, in their laboratories, and the steps in their careers which led them there. While describing the career, personality and methods of the man, Mr. Calder contrives to make it clear how the subject of his portrait has come to love scientific research. He shows us, for example, how curiosity and a boyish interest in solving puzzles played a part in the outlook of Rutherford, and how a sense of the pressing social importance of nutritional research activates a man like Boyd Orr. In the portrait of Gowland Hopkins we catch a glimpse of that most important of all qualities in a scientist—a lively desire to understand the meaning of things.

While showing us why scientists enjoy science, which is one part of his method, Mr. Calder is busy also reducing the gap between the reader and the discoverer, which is the other part of it. He sees the

successful scientist not as a remote "genius", but as a man with very human frailties and shortcomings, who has acquired his distinctive skills by processes not greatly different from those by which success is achieved in other walks of life.

The scientist, then, is deeply interested in his research, and he is not very different from other men. When these two points are made clear it seems natural to expect that the work which has fascinated a few should also interest a great many other people. Described by Mr. Calder, we can be sure it does.

H. O. J. COLLIER.

STERILIZATION IN NORTH CAROLINA, by Moya Woodside. (University of North Carolina Press. 1950. Pp. xv and 219. Price $2.50 or 20s.)

The author is a psychiatric social worker from Northern Ireland, who joined the staff of the Institute for Research in Social Science in the University of North Carolina and has made a special study of the state sterilisation laws. The eugenic sterilisation law was introduced on July 1st, 1933, and it empowers the Eugenics Board to act in cases of feeble-mindedness, epilepsy, and mental disease for the " best interests, mental, moral or physical, of the individual concerned; or for the public good; or where children who might be born would have a tendency to serious physical, mental or nervous disease or deficiency." The workings of the act and statistics concerning the 1901 persons sterilised under it up to 1947, together with case records of some individual persons, are well set out. The book is a clear and concise statement of the present law and its application in the state and, as such, will prove a valuable reference work.

Unfortunately there is little scientific study recorded of the effects of the law. There has been no follow-up in individuals of the sociological or psychological consequences of eugenic sterilisation. Nor are there observations on a control series of similarly handicapped persons remaining unsterilised. Nevertheless the hypothesis that eugenic sterilisation is a " good thing " has been swallowed hook, line and sinker by Miss Woodside. Much of the book is taken up with polemics for more education and propaganda concerning the value of the measures described. Doctors especially are castigated for their indifference to the subject. Those who, like the reviewer, may doubt whether the value of eugenic sterilisation is as yet fully established are summarily dismissed since their opinions are " founded on emotion or on inaccurate knowledge." However, it is not difficult for the discerning reader to separate the propaganda from the factual statement. The latter remains an excellent, yet unfortunately incomplete, account of an important social innovation, upon the ultimate value of which some of us prefer to reserve judgment.

R. PASSMORE.

EMERGENCIES OF CHILDHOOD, by R. Gamlin. (James Nisbet & Co., Ltd. 1950. Pp. vi and 64. Illus. Price 6s.)

Experience in training personnel in first-aid during the war emphasised the need for simple and clear instruction. Dr. Gamlin, no doubt with these points in mind, has succeeded in producing an admirable manual for dealing with the emergencies of childhood. Whilst there are a number of books in general on the subject, the material dealing specifically with conditions met with in children, tend to be scattered in such books as those on school hygiene. Here in one slim volume are found the familiar subjects dealt with in the official first-aid manuals together with other forms of emergencies and mishaps which teachers and parents are called upon to handle.

Excellent general advice is given in the preface and the need for prevention is

emphasised in calling attention to the Ministry of Education's Pamphlet *Safety Precautions in Schools.*

The section on "Ailments and Mishaps" should prove very helpful. Information on such subjects as epileptic fits, poisoning, concussion, and food poisoning, which is often sought, is given clearly and in relation to the school environment. This section also deals with artificial respiration and the "Schafer method" is described. Whilst the Author states in the preface that "there are occasional slight differences in technique between the publications" of the official manuals in first-aid, it is unfortunate that he should give, and illustrate, an alternative method of treatment astride the patient. This is not the accepted "Schafer method."

Other sections discuss "Bleeding and its arrest," "Bandages," "Bruises, wounds, sprains and dislocations," "Fractures."

The section on infectious diseases includes four coloured plates illustrating the commoner infections of childhood. Possibly in a book of this composite nature, the section could be amplified by short notes on general preventive measures and the detection and exclusion of early cases in the style of the pamphlet *The Limitation of Spread of Infectious Diseases in Schools*, issued by the Central Council for Health Education.

The book is to be commended and should find a place in every school.

H. M. COHEN.

A HISTOLOGY OF THE BODY TISSUES, by Margaret Gillison. (E. & S. Livingstone Ltd. 1950. Pp. 220. Illus. Price 15s.)

School teachers, and students of biology, physiology, physiotherapy, physical education or nursing will welcome this book as a clear and beautifully illustrated foundation on which to build their knowledge of how the body works. It supplies a link between the anatomy and physiology of the microscopic field which is often weak, but which is becoming increasingly important to our understanding of the functioning of the body as a whole.

ANNE BURGESS.

SEX INSTRUCTION IN THE HOME, by Rev. Aidan Pickering. (Catholic Truth Society. 1950. Pp. 24. Price 3d.).

This pamphlet for Catholic parents sets out to answer the questions what sex instruction should children at various ages have, whose duty is it to give it, and how should it be done. The arguments are backed up by useful quotations from Catholic authorities. This is a valuable statement of the contemporary Catholic view on sex education and clarifies many popular misconceptions. It should be of great help to both Catholic parents and those non-Catholics who have to deal with Catholic children.

JOHN BURTON.

AUDIENCE (A magazine for Secretaries, Lecturers and Audiences. Quarterly. Pp. 32. Price 1s. 2d. per issue, or 4s. 8d. per annum, post free, from 165 Hatfield Road, St. Albans, Herts.).

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ANNE BURGESS.

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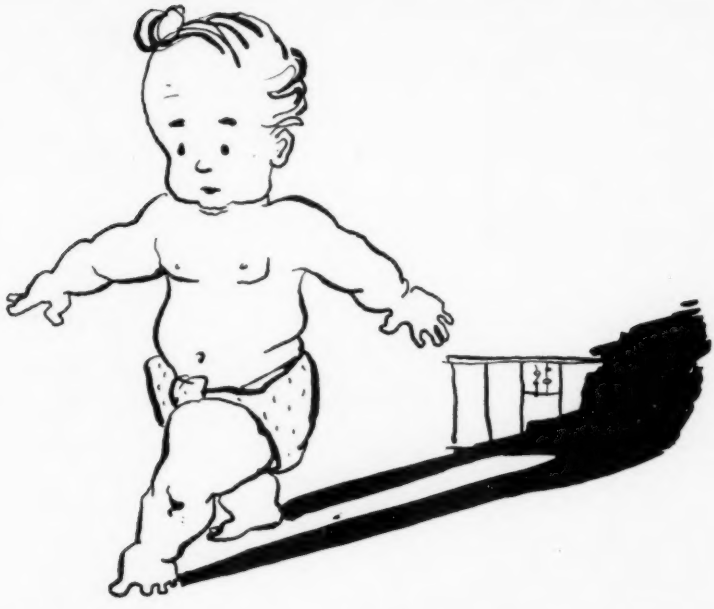

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